THE RAILWAY GAZETTE AND Railway News
A JOURNAL OF RAILWAY MANAGEMENT, ENGINEERING, OPERATION AND RAILWAY NEWS.
with which are incorporated
The RAILWAY RECORD, RAILWAY OFFICIAL GAZETTE, RAILWAYS ILLUSTRATED, TRANSPORT, HERAPATH'S RAILWAY JOURNAL and The RAILWAY TIMES (established 1837)

PUBLISHED EVERY FRIDAY
AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE PARL., LONDON"
Telephone No.: VICTORIA 8836 (6 lines)

Annual subscription payable in advance and postage free:
British Isles and Abroad..... £2 5s. 0d.
Single Copies..... One Shilling

Registered at the General Post Office, London, as a Newspaper

VOL. 61 No. 11 FRIDAY, SEPTEMBER 14, 1934

## CONTENTS

| | PAGE |
|---|---|
| Editorials | 417 |
| Letters to the Editor | 422 |
| Publications Received | 423 |
| The Scrap Heap | 424 |
| Overseas Railway Affairs | 425 |
| North Island Main Trunk Line, New Zealand | 428 |
| New German Ten-Coupled Goods Locomotives | 431 |
| Kalabagh-Bannu Section Flood Damages, N.W.R., India | 433 |
| Railway News Section | 435 |
| Personal | 435 |
| News Articles | 437 |
| Notes and News | 441 |
| Contracts and Tenders | 444 |
| Official Notices | 445 |
| Railway Share Market | 446 |

## The Danger of Monopolies

WHETHER a transport monopoly, such as that suggested by Professor Hallsworth in his address on September 7 to the British Association at Aberdeen (abstracted on another page of this issue), would operate satisfactorily from the point of view of the travelling and consigning public—the consumer—or not, would depend upon the supply of supermen to direct it and its colossal departments. It is quite likely that sufficient supermen exist, but unrecognised, for conditions to-day demand that every boy, as soon as he grows up, shall take the first job available, congenial or not; and a potential genius at one task may be a failure at another if it does not call for the exercise of his particular talents. Vast organisations to work well have to be widely decentralised, and, unless the co-ordinating arrangements between decentralised sections are really effective, it were better to have small independent concerns with the competitive incentive. To assure effective co-ordination requires a rare type of organising genius at the head. The replacement of small concerns, in which staff morale can be kept at concert pitch by close contact between responsible master and man, by huge inhuman monopolies, is risky. The failure of a nation-wide monopoly may be disastrous; that of a small business not serious. If, instead of displaying before our eyes a nightmare vision of vast monopolies to solve an unspecified problem economists would devote their attention to solving the very pressing and fundamental problem of enabling people to "consume" the plentiful supply of transport available, they would earn our thanks.

## N.V.C.'s

A National Vigilance Committee has been set up in Italy to inspect the restaurants and buffets at all the principal stations; to see that the food is good, the prices reasonable, and the places tidy. It will be part of the N.V.C.'s duty to sample the wines and liquors, which must be of best quality. Further, a campaign is to be conducted against flies, and special recommended remedies are to be tried. With such terms of reference there should not be any lack of volunteers for service on the N.V.C., and after a sampling repast it will be good for the digestion to swot a few flies, or sleepily to watch the effect of the recommended remedies (on the flies, of course). This idea of an N.V.C. for the inspection of railway catering departments might well be copied over here, with advantage to the public, if not always to the members of the committee; and although the fly problem is not so acute here as it is in Italy, it might be that after sampling all the native beverages the British N.V.C. would find the number of (apparent) flies increased enormously, in which case the best remedy, and this too is recommended, would be to go to sleep.

* * * *

## The Week's Traffics

Though the passenger train traffic increases of the four group companies for the past week are small, they compare with excellent takes for the corresponding week of 1933. Merchandise earnings for the week are also on top of gains a year ago, except on the Southern, and the substantial increases of the past week in coal class traffics on the L.M.S.R., L.N.E.R. and G.W.R. compare with small advances in the corresponding week of 1933. For the year to date the aggregate traffics of the four companies amount to £103,289,000, an increase of £4,395,000, or 4·44 per cent.

| | 36th Week | | | | Inc. or dec. | |
|---|---|---|---|---|---|---|
| | Pass. &c. | Goods, &c. | Coal, &c. | Total. | Year to date | |
| | £ | £ | £ | £ | £ | % |
| L.M.S.R. .. | + 1,000 | + 27,000 | + 19,000 | + 47,000 | + 1,843,000 | + 4·65 |
| L.N.E.R. .. | + 6,000 | + 4,000 | + 18,000 | + 28,000 | + 1,755,000 | + 6·14 |
| G.W.R. .. | + 3,000 | + 5,000 | + 12,000 | + 20,000 | + 489,000 | + 2·78 |
| S.R. .. .. | + 5,000 | + 3,000 | − 2,000 | + 6,000 | + 308,000 | + 2·23 |

London Transport receipts for the past week show an increase of £6,300, the advance for the ten weeks of the year to date being £53,200.

* * * *

## Trans-Siberian Luxury Travel

Even before the revolution, economic conditions in Russia made it necessary for such long-distance services as that provided by the Trans-Siberian railway to depend largely upon international traffic for their passenger revenue. The coming of Communism served further to reduce the number of Russian nationals with the means or necessity to travel extensively, and at the same time the state of the country during the early years of the new régime was hardly calculated to attract traffic from without. In pursuance of the necessary policy of opening its doors to the outside world, however, the Soviet has lately introduced two much improved services between Stolpce, on the Polish frontier, Moscow and Manchouli, where connection is made with the Chinese Eastern Railway. One of these trains, known as the Blue Express, carries the usual "soft" and "hard" coaches, together with a dining car and composite first and second class sleeper. The other, a *train de luxe*, with better accommodation, is composed throughout of first and second class dining and sleeping cars. Both trains enable the journey between London and Manchouli to be completed in nine days. Their staff includes officials specially detailed to promote the comfort and convenience of travellers through an unfamiliar

country. The potentialities of the Trans-Siberian railway were too great to be cramped by political considerations, and by thus developing them the U.S.S.R. will be rendering an international service.

* * * *

**Travel with a Holiday Season**

Quite apart from being a noteworthy example of how to extract the maximum travel value from the minimum outlay, to cover 2,339 miles with a holiday season ticket in a week indicates the co-operation of an intensive train service. This is what has recently been accomplished by a correspondent of ours, Mr. Cecil M. Furst, in the Edinburgh No. 1 area of the L.N.E.R. We referred to a similar enterprise by Mr. Furst last year in THE RAILWAY GAZETTE of September 29, 1933, when he had completed 2,501 miles in the L.M.S.R. Carlisle area No. 4, and we learn that his career as a record breaker began in 1932, when he achieved 1,943 miles in the L.M.S.R. Carlisle area No. 4 and 1,709 miles in the Edinburgh area No. 1 of the L.N.E.R., each within a week. With the figures already quoted, this brings his total up to 8,492 miles in four weeks. We are glad that our correspondent's account of his experiences enables us to deduce more than a fund of energy and endurance, for these are qualities which might be equally well demonstrated without such attacks on the average receipts of the railway companies per passenger-mile. As it is, Mr. Furst sends us some valuable evidence as to the high standard of locomotive performance obtaining on the difficult section of the Waverley route between Galashiels and Edinburgh.

* * * *

**Victoria: Her Centenary and Railways**

The arrival of the Duke of Gloucester in Melbourne will mark the ceremonial beginning of the Victorian and Melbourne centenary celebrations, which are due to last until May next. Although the State is but 100 years old, its railway system had its origin eighty years ago this week when, on September 13, 1854, a two-mile line from Flinders Street to Port Melbourne (then called Sandridge) was inaugurated by the Melbourne & Hobson's Bay Railway Company. To-day a Government railway system of over 4,700 miles represents the great contribution of railway transport to the development of the country. Notwithstanding the substantial Government assistance given to private railway companies, they found themselves unable to carry on successfully in a new country where the work of transport was largely developmental. In 1857 legislation was passed authorising the Government to undertake railway construction, and on July 1, 1878, practically the last of the private lines was merged into the State system. Incidentally, the Port Melbourne line of 1854 was the first locomotive line opened (although not the first authorised) on the Australian continent.

* * * *

**The St. Enoch Disaster**

It is safe to say that railway accidents always will be possible. Were train movements automatically controlled by machine there would still be the possibility that the apparatus might fail and then, because it had not the brains of the human agent to retard the effect of the failure, the remedy might be worse than the disease. For good—as well as for ill—we have not reached any such so-called perfection, and the safety of our railways still is largely dependent upon the watchfulness and sound common-sense of our drivers and signalmen. The unfortunate accident at Port Eglinton junction, in the St. Enoch station area, Glasgow, L.M.S.R., on the evening of Thursday, September 6, prompts us once more, as after the Leighton Buzzard derailment of March 22, 1931, to point out the extent to which train movements are dependent upon the care of drivers and signalmen. There are some 21,000 steam locomotives, besides the electrically-operated units, driven by 32,000 engine drivers and motormen, which run over 400 million miles a year and whose movements are watched and controlled by 26,000 signalmen. Despite that, except for the one fatality at Dagenham Dock on December 18, 1931, when, in a dense fog, the separation of a goods train, due to a defective coupling, was not observed by a signalman, there has not been a collision between two trains, in which passengers lost their lives, since one was killed at Culgaith on March 6, 1930—exactly 4½ years ago.

* * * *

**Tunis Railways in 1933**

Compared with the previous year, the receipts of the Tunisian Railways in 1933 fell by 25 per cent. to 50,984,569 fr., and this followed a decrease of 17·5 per cent. between 1931 and 1932. As the working expenditure was reduced only by 6·4 per cent. to 120,549,741 fr., the operating ratio was raised from 189 to no less than 236. Passenger traffic receipts were reduced by 24·3 per cent., *grand vitesse* receipts by 22·7 per cent., and *petite vitesse* takings by 25·6 per cent. Passenger receipts formed 28 per cent. of the total revenue. The number of passengers carried decreased by 14·3 per cent. to 3,245,221, and the *petite vitesse* tonnage by 16·8 per cent. to 1,296,070. The reduction of 28 per cent. in the tonnage of mails and parcels carried was due almost wholly to road competition. The length of line open to traffic remained unchanged at 1,610 km., and in view of the limitation of credit, the only works of any importance to be undertaken were the doubling of a short length of line on the Tunis suburban section, and the replacing of the standard 25 kg. rail by a 30 kg. section between Djebel-Djelloud and Radès. In an endeavour to reduce the working expenditure the French Government is contemplating the purchase of 20 diesel railcars, but it is evident that only an appreciable increase in traffic can materially improve the enormous operating ratio.

* * * *

**Pennsylvania's Six Months' Operations**

Gross revenues of the Pennsylvania Railroad Company for the first six months of this year amounted to $176,377,459, an increase of 19 per cent. over 1933, and the net railway operating income, that is, the amount remaining after deduction of operating expenses, tax payments and joint facility and equipment rents was $31,715,058, an advance of almost 24 per cent. over last year, according to a statement of financial results for the six months' period, recently made public. The Pennsylvania's operating ratio was 72·23 per cent., the lowest for the six months' period in the last 18 years except 1933, when the figure was 71·30 per cent. Of the $28,106,231 increase in gross revenue, January to June inclusive this year as compared with last, increases in operating expenses absorbed $21,683,971. Expenditure for the maintenance of the property and equipment during the period increased $11,512,846 over last year, while transportation expenses, representing the direct cost of moving the railroad's traffic, advanced $8,629,223, brought about to a considerable extent by increases in the cost of materials used in railroad operation, particularly locomotive fuel. For the month of June the statement shows gross revenues of $31,348,280, an increase of 7·8 per cent. over 1933, and net railway operating income of $6,276,127, a decrease of

$1,462,399 compared with June of last year. The June decrease in net income was due principally to greatly increased expenses for the maintenance of property and equipment, representing a $2,000,000 advance in the month as compared with June, 1933. Transportation expenses in June increased $1,279,000, due largely to increased cost of materials used in transportation, principally fuel.

* * * *

### Platelayers' Huts

Industrial psychologists have worked out chapter and verse to prove that congenial surroundings make towards more efficient work. The observant administrator, of course, knew this all along, but unfortunately the really observant man in a responsible position is something of a *rara avis*. On page 431 of this issue will be seen what he can do when his responsibility is combined with a little power. On that page are given two illustrations showing the interior of a platelayers' hut and their tool and material store, on a section of the London Passenger Transport Board's railways. The former might be the kitchen of one of the latest model "mansionettes," and the latter would make the eyes water of many a young platelayer less fortunately placed. We should not be surprised to learn that the cost of this accommodation was little, if any, more than the average cost of platelayers' accommodation anywhere, and even if it were, the resultant saving due to the efficiency promoted would be well worth it.

* * * *

### Double-direction Signalling in Germany

Frequent repairs are necessary to the structure of the Brandleite tunnel, 3,039 metres long, between Gehlberg and Oberhof on the German State Railway, as a result of which single line working is often necessary. In order to minimise traffic delays and so enable single line working to be brought into use at any time without having to make special arrangements, the signalling apparatus, which recently became due for renewal, has been rearranged in such a manner that both lines can now be used for traffic in either direction at will. The usual degree of safety is, of course, afforded by the standard lock-and-block apparatus adopted for both double and single-line working in Germany. A somewhat similar scheme had previously been installed in the Cochem tunnel with very good results, but improvements have been introduced at the Brandleite tunnel which make the working of the block more flexible and simpler for the signalmen. The frequency of track repairs in the tunnel has been reduced by welding the rails from end to end and so eliminating joints. An editorial note on traffic working in the Brandleite tunnel appeared in THE RAILWAY GAZETTE of September 22, 1933.

* * * *

### Heavy Freight Engines in Germany

New types of locomotives for working heavy freight traffic have been introduced on the German State Railway during the past few years, some of them having two, and others three or four cylinders. These include both simple and compound engines, and we have observed very heavy freight trains being hauled by one locomotive without assistance on sections which are by no means easy in grading or general conditions. These developments have led to the introduction of an even more powerful class of compound freight engine, having four cylinders and the 2-10-0 wheel arrangement. The design incorporates all the latest features associated with modern German locomotive practice, particularly those appearing in the most recent four-cylinder compound express engines of the 4-6-2 type, the principal difference between them being that of the number and size of the coupled wheels. The new engines, one of which is illustrated and briefly described on another page, are the heaviest at present in use in Germany. The engine and tender together in working order weigh approximately 186 tons and they show an increase in tractive effort of from 10 to 15 per cent. over that of the previous most powerful engines. The diameter of the coupled wheels was chosen to allow of the engines running at a fairly high maximum speed with the continuous-braked goods trains now universal in Germany. This was fixed at 80 km. (49·7 miles) an hour. Although such speed is rarely demanded, the engines are thus capable of maintaining the accelerated schedules adopted for goods trains to facilitate traffic working on certain sections of the Reichsbahn.

* * * *

### The Modern Locomotive

If any branch of railway administration has failed to progress with the times it is not that over which the engineers preside. Perhaps the most noticeable advances have been made on the mechanical side. The observant traveller on any of the British main line railways can scarcely fail to notice the enormous loads hauled single handed by modern express locomotives, and hauled punctually, to very fast schedules. We noticed recently a 550-ton train behind one of Mr. Gresley's L.N.E.R. Pacifics passing Peterborough, 76 miles from the start, in 77 min. On the Great Western a modern 4-6-0 with 500 tons behind the tender will be through Westbury, 95 miles, in as many minutes, and a "Royal Scot" on the L.M.S. with a similar load may be observed pulling up at Rugby, 82½ miles, within the schedule of 88 min. Trains are not often quite so heavy on the Southern, but a "King Arthur" or a "Lord Nelson" 4-6-0 will easily cover the 75 miles out of town with a 400-ton train in 80 min. or so, and will sometimes do it in less if required. On all of these routes there are miles of adverse gradients, yet these modern efficient steam locomotives will ascend them without difficulty and on the favourable slopes will reach speeds above 80 m.p.h. with the utmost ease.

* * * *

### Taking Advantage of the Modern Locomotive

Although certain of the principal main line trains in this country have been accelerated of recent years and their loads increased because of the much greater capacity of the modern express locomotives available to haul them, there remain many of the less spectacular and lighter cross-country and semi-fast trains for which the same power is available but the timings of which have not been improved proportionately, if at all. Numerous instances come to mind on a par with one which has become notorious to regular travellers on the line concerned. This is a train which, making only four brief stops on an 80-mile journey, takes more than half an hour longer than a non-stop train, although it is always hauled by the same type of engine and is no heavier. There is also room for improvement in the timings of many of the lighter local and long distance stopping trains to which ex-main line express locomotives having much greater power than those formerly used are relegated. Many such trains now spend an altogether disproportionate time waiting in stations, where they arrive before booked time. Such instances as these, which are often adversely commented upon by the travellers who have to use the trains concerned, ought to be made the subject of closer investigation than they have received in the past, with a view to giving the best possible service to the public as well as to achieving greater efficiency.

## The Saar Territory and Its Railways

THE inhabitants of the Saar Territory, which is a creation of the Versailles Peace Treaty, will be called upon in January, 1935, by the terms of that treaty, to decide by a plebiscite under what sovereignty they desire in future to live. At present the territory is under the control of a Commission of five, the members of which are nominated by the League of Nations. One must be a German born in the Saar, and one a Frenchman, and the remaining three must come from countries other than France or Germany. The inhabitants have the choice in 1935 of returning to Germany, of joining France, or of remaining under the League of Nations. The Saar Territory as now constituted has an area of about 740 square miles with a population of about 800,000. Before the transference of control to the League of Nations on January 10, 1920, it consisted of about 575 square miles of the Prussian Saar district and of about 165 square miles of the Bavarian Saar. The River Saar serves as the boundary between France and the Saar Territory for a short distance, but in other respects the Territory has no natural frontiers. It includes suburbs of Sarreguemines, the towns of Saarbrücken, Saarlouis, Merzig, St. Wendel, Neunkirchen, and Homburg. About one-third of the area is industrial, the remainder being mainly agricultural. The coal mines of the Saar Basin were ceded to France under the Treaty of Versailles as compensation for the damage done during the war to the coal areas in the north-east of France, and are worked by the French Government. Germany will, however, have the right to re-purchase them should the plebiscite of 1935 go in her favour. In 1929 the output of these mines was nearly 14,000,000 metric tons, but last year it had fallen to 11,500,000. There is also a considerable production of pig-iron and steel in which Saar coal and coke and Lorraine minerals are employed. The present output is about 1,400,000 tons of pig-iron and 1,500,000 tons of steel.

The railways in the Saar Territory have a total length of about 271½ miles. Their extent is shown in a map published in our Overseas columns on page 426. Of this total 21¾ miles are worked by the Alsace-Lorraine Administration. The remainder, consisting of 196¼ miles formerly belonging to the Saarbrücken Division of the Prussian State Railways and of 53½ miles included in the Palatinate Division of the Bavarian State Railways, has been since 1920 under the absolute control of the League of Nations Commissioner entrusted with the charge of Public Works. For many years this Commissioner was a Belgian, but the present Commissioner is a Finn. The direct management is entrusted to a President, who is assisted by three superior officers (Abteilungsdirektoren) in charge, respectively, of three branches: (1) administrative, financial, and commercial matters, (2) movement and traction, (3) way and works. Under them are heads of sections in each branch. There are also heads of sections who are directly responsible to the President. The staff, numbering 12,500, is mainly German, and salaries, wages and conditions of employment are comparable in the main with those prevailing in Germany. Payments are made in French francs, which are the legal tender of the territory. The railways in the Saar Territory, though small in extent cannot be regarded as in any way comparable with a system of local interest. They form a nest of international railways of great importance both from an economic and a strategic point of view, and also constitute in effect a huge shunting depot. The largest town served by them is Saarbrücken with a population, according to the latest census, of 125,020. Neunkirchen has 41,031 inhabitants.

## Accidents to Railway Servants

THE terrible toll on human life now exacted by road traffic has diverted attention from the loss of life on the railway and particularly among railway servants. Railway employment must still be regarded as a hazardous occupation, but few know the extent by which that risk has been reduced. Colonel Mount's annual report on the accidents and casualties reported by the railway companies during the year 1933 suggests, therefore, an opportunity to show the great change for the better that has marked the last thirty years. Accidents to railway servants come under three headings: (1) train accidents, (2) movement accidents and (3) non-movement accidents; movement accidents are those caused by the movements of trains and vehicles other than in train accidents, whilst non-movement accidents are the mishaps to men in goods sheds, locomotive depôts, &c., in loading, unloading or sheeting wagons, moving goods or luggage in stations or sheds, attending to engines at rest and other such work, away from the movement of trains, carriages or wagons. When the late Sir Herbert Jekyll became responsible for the railway accident returns and had to deal with those for the year 1903, he took the non-movement accidents out of the then usual summary entirely, because, as he observed, they "cannot properly be regarded as railway accidents at all, since they are not caused by railway working and are of a kind incidental to all forms of industrial employment." Sir Herbert proceeded to remark that such accidents were included in the returns because the Act of 1871 required them to be reported, but "their inclusion among railway accidents has swollen the totals unduly and has given rise to much misconception." In subsequent years, until 1919, the summary was followed by a paragraph which stated that, in addition, "a large number of accidents unconnected with railway working occurred on railway premises and were reported in compliance with the requirements of the Act of 1871." The numbers killed and injured therein were then given, but, as we have said, they did not appear in the summary. When Sir John Pringle became responsible for the returns after the Ministry of Transport was established in 1919, he included, commencing with the figures for the year 1919, the non-movement accidents, and consequently the total of 9,054 injured, given in the summary of the pre-war year of 1913, rose to 23,983 in 1919. This also results in Colonel Mount having to record in his annual report for last year that "The following table shows the total number of persons killed or injured by accidents in connection with the working of railways. . . . Total, killed 332; injured 21,696," whereas had the non-movement accidents been given in a separate table, the totals would have been: killed 282; injured 7,348. In view of the necessity for correctly presenting the number of accidents on the rail as compared with the casualties on the road, we commend to Colonel Mount's consideration the segregation of non-movement accidents. As a matter of interest in this connection, we would say that in an editorial note in THE RAILWAY GAZETTE of October 17, 1924, we suggested that the figures as to trespassers, suicides and attempted suicides should be taken out of the "Other Persons." That was done, and those figures were given in a footnote and, consequently, the 417 "Other Persons" killed in 1923 was apparently reduced to 87 in 1924.

After what we have said, there is, it will be admitted, no occasion for us, in dealing with the accidents to railway servants, to comment on the non-movement accidents. Nor need we, as they are so few, refer to servants killed and injured in train accidents. Furthermore, it will probably suffice if we deal alone with the more serious aspect of the movement accidents and consider only the fatal

accident figures. We would add, for the information of our readers, that there were 2,406 servants injured in movement accidents during 1933; 2,326 in 1932, and 2,633 in 1931; the yearly average for the years 1925-1929 was 3,162 and it was 3,403 for 1900-1924. There were 152 fatal cases in 1933 and the corresponding figures for the periods just named were 167, 146, 201 and 241. In passing, in order to show the extent by which the risk run by railwaymen has been reduced, we would say that, thirty years ago, the movement fatalities were 443 in 1902 and 446 in 1903. Three headings covered 128 of the 152 fatalities last year: in other shunting accidents than coupling and uncoupling, 34; whilst working on the permanent way, 32; whilst walking or standing on the line on duty or when proceeding to or from work, 62. There were 3 fatal accidents to men when coupling or uncoupling vehicles, which figure compared with 2 in 1932, 3 in 1931 and a yearly average of 5 for 1925-1929. Those figures show that there is no call for automatic couplings in this country on safety grounds alone, though there may be under certain operating conditions. Of the 32 men killed whilst working on the permanent way, 15 were considered to have been due to want of individual care in crossing lines, &c., or lack of care on the part of others; 8 were accidental and 4 owing to failure to act upon warning received or to comply with regulations. It is to be regretted, though, that in 5 cases no look-out man was provided. To that subject we return in a moment. Of the whole of the 152 fatal accidents it was considered that 60·27 per cent. were due to want of caution or misconduct on the part of the person concerned; 29·14 per cent. as accidental or by misadventure and 6·62 per cent. to want of caution and breach of rules, &c., on the part of some other servant or servants. In only 4 cases were there defective systems of working, dangerous places, dangerous conditions of work or want of rules or systems of working and in only another 2 were there defective apparatus, appliances, or too few safeguards.

Alluding to the cases, mentioned above, where no look-out man was provided, Colonel Mount says in his report that the casualties under that head show a substantial reduction as compared with previous years, but the need for better appreciation on the part of gangers, and others similarly situated, of their definite duty to appoint a look-out man before starting work, when and wherever danger is likely to arise, is still apparent. Concluding his remarks as to accidents to permanent way men, he observes that, generally, the risks attendant on this occupation still deserve, and are receiving, much attention. The personal education of gangers and others, on whom rests largely the responsibility for the protection of the men under their control, is strongly advocated. The need for greater personal care on the part of all those who work on the permanent way is shown by the fact that, during 1933, as many as 58 per cent. of the fatal and non-fatal accidents to men thus engaged were due to failure in this respect. The efforts of the railway companies to keep this important feature in the minds of the men concerned, both by lectures and letterpress, should be continued. It is satisfactory to record that the figures for this occupation continue to show improvement as compared with recent years, and indicate that greater care is, in fact, being generally exercised. While it is difficult to form comparisons with those years, as to risks of injury in certain grades, that can be done in the case of casualties to permanent way men, signal fitters and telegraph wiremen, which form 91 per cent. of the total casualties. The incidence of accident in those grades was approximately 1 casualty in respect of every 1,000 persons employed in 1933, as compared with 1 in 900 in 1932, 1 in 925 in 1931, 1 in 825 in 1930 and an average of 1 in 775 in the five-year period 1925-29.

## Air and Road Competition with U.S.A. Railways

IN America aerial competition is being felt with increasing severity by the railways operating long-distance passenger services. There is now a new aeroplane service operating daily right across the North American Continent from New York to Los Angeles. Starting at 4 in the afternoon from New York, the passenger arrives on the Pacific coast at 7 the next morning—that is, in a total flying time (allowing for the three changes of time *en route*) of 18 hr. For the use of this service, including meals on the journey, the inclusive charge is $160. The fastest service offered by the railways is to leave New York at 5 p.m., to reach Chicago at 9.45 the next morning, and, after a wait of 90 min. there, to depart at 11.15 a.m. and to reach Los Angeles two days after that, at 3 in the afternoon. By rail, therefore, three whole days and nights are spent in making the journey which the daily plane service completes overnight. Not only so, but the cost of the rail journey, including the ordinary " coaches " fare of $94·40, *plus* a supplement of $23·75 for the lower berth of a sleeper during the three nights spent in the train, additional supplements, amounting to $20, for the fastest train services between New York and Chicago, and Chicago and Los Angeles, and, say, $12 for meals *en route*, works out at fully $150, or only $10 less. The American railways have already laid plans to cut the time between Chicago and the Pacific coast by fully 24 hr., and the demonstration run recently made by the diesel-electric Burlington Zephyr which made a non-stop journey over the 1,015 miles from Omaha to Chicago in 13 hr. 5 min., at an average speed, including all slacks, of 77·3 m.p.h., goes to show that when more of this type of train are introduced there will be no difficulty in making such a reduction. The all-rail time from New York to Los Angeles would then be reduced to two days and two nights, although even this would bear little comparison, in point of journey duration, with the overnight air service.

It is, however, not merely aerial competition that is compelling American railways to make substantial cuts in their long-distance journey times. Such has been the improvement of the roads over the distance of just over 400 miles which separates Chicago from the twin cities of St. Paul and Minneapolis that private cars are now comfortably averaging over 50 m.p.h. for the whole journey, and completing it in 8 hr. or so. Faced with this fact, the three railways which compete for this intercity traffic—the Chicago, Burlington & Quincy; Chicago, Milwaukee, St. Paul & Pacific; and Chicago & North Western—are laying plans for radical acceleration of their train services. The three routes vary in length from 407 to 431 miles, and it is proposed to cut the express passenger times, according to the class of train, from the present 10½ to 13½ hr. down to times varying from 6½ to 9 hr.

On the C.B. & Q. line the fastest service will be provided by a couple of three-car streamlined articulated train-sets, with diesel-electric propulsion, and making the journey of 431 miles in 6½ hr., stops included—that is, at an overall speed of 66 m.p.h. An experimental run has already been made with the Burlington Zephyr 3-car train of this company, and resulted in a time of 6 hr. 4 min. over the 431 miles from Chicago to St. Paul, inclusive of six one-minute stops intermediately. This entailed an overall average of 71·2 m.p.h. The fastest point-to-point run was over the 28 miles from La Crosse to East Winona, covered in 21 min., at 80 m.p.h. from start to stop, and several other intermediate stages were covered at very high speed.

# LETTERS TO THE EDITOR

*(The Editor is not responsible for the opinions of correspondents)*

## Standardising Locomotive Boilers

London,
September 12

To the Editor of The Railway Gazette

Sir,—With reference to your note on page 335 in The Railway Gazette of August 31, and G.7's letter to the editor on page 372 of the issue of September 7, it seems probable that the greatest standardisation of boilers of British design has been in India. The very numerous B.E.S.A. broad gauge 4-4-0 and 0-6-0 types, having, I believe, identical boilers, are used not on one, but on many of the large railway systems in that sub-continent. In a lesser degree the same remarks apply to the B.E.S.A. 4-4-2, 4-6-0, and 2-8-0 types and there are also very large numbers of 4-6-0 passenger and goods metre gauge engines all over India which have boilers of the same general design and dimensions. The largest numbers of identical boilers were almost certainly in use prior to superheating, but even now the general dimensions and fitting, and all but details, are generally similar. It would be interesting if one of the large locomotive builders in this country or some locomotive engineer from India could enlighten readers through the medium of your correspondence columns as to how many types of locomotive are fitted with similar boilers. The numbers of locomotives or of boilers of each type would not be so easy to ascertain.—Yours faithfully,

"B.S.I."

## Evolution of the Sleeping Car

Bordyke, Burgess Hill,
Sussex, September 7

To the Editor of The Railway Gazette

Sir,—To the North British Railway belonged the kudos of owning the original of the East Coast Joint Stock sleepers mentioned in your account of the evolution of the sleeping car. The vehicle, as you state, was built by the Ashbury Railway Carriage & Iron Co. Ltd., and was of the usual 30 ft. length of five-compartment passenger coaches of the period. It was carried on six wheels and was constructed as a "family carriage"; there was a luggage compartment at one end and a second class compartment at the other. The space usually occupied by the centre compartment was utilised for a passage connecting the compartment on either side; with a w.c. on one hand, and a "dressing closet" with lavatory basin on the other. A supply of water was carried in a shallow tank in the roof.

The two first class compartments by day had the appearance of the usual 3-a-side compartments. For night travel the seats with backs drew forward, half across the gangway, each meeting its "opposite number"; they apparently were swivelled, so that the backs of each pair of seats made a back to a couch formed by two seats. There were thus three couches in each compartment, or six in all. Alas! for the tall, the beds were only 5 ft. 6 in. in length.

A continuous footboard was provided. As there was no internal communication between the servants, (or second class) compartment and the others, perhaps this innovation was fitted to enable the servants to reach their employers if their presence was required!

This sleeping carriage was on view at King's Cross on February 25, 1873, and was probably the North British Railway Company's contribution to the first sleepers of the East Coast Joint Stock, which you mention as put into service on September 1, 1873.

It should not be forgotten that this was not the first sleeping car on English railways. Practically as soon as the London & Birmingham Railway was opened throughout a "bed carriage" was provided on the night mails. The division separating the first class coupé and the boot of the mail coach, was removable, and the space across the gangway was bridged by the bed, which extended into the boot, the sleeper's legs being thus provided for. The Grand Junction Railway had similar bed carriages.

Yours faithfully,

G. A. SEKON

## "Hot Soup for Hot Weather"

London, September 9

To the Editor of The Railway Gazette

Sir,—I owe you an apology for returning to the subject of "Hot Soup for Hot Weather," but the attached menu of meals served in one of our famous expresses on a piping hot day in early September is almost too good to be true!

| LUNCHEON 3/6 | DINNER 5/- |
|---|---|
| Crème de Poireaux | Potage Conti |
| Grilled Herring Mustard Sauce | Fried Slip Sole Tomato Sauce |
| Roast Mutton Onion Sauce | Salmis of Grouse Forestiére |
| or | |
| Boiled Silverside and Dumpling | Roast Beef Horseradish |
| Baked and Boiled Potatoes | Baked and Boiled Potatoes |
| Cabbage | Scarlet Runners |
| Vanilla Ice | Vanilla Ice |
| Peach Mary Garden | Manchester Pudding |
| Cheese, Salad, &c. | Cheese, Salad, &c. |
| | Dessert |

Coffee, per Cup, 4d.

Thick soup, with no melon or grape-fruit to relieve it, followed by boiled beef and dumpling (and without the usual alternative of cold meat and salad) is indeed an amazing "summer" lunch selection, and I am reminded of an angry passenger who complained, on a previous occasion, to the car-attendant and was firmly told that no alteration in fare was possible because "the gentleman who arranges the menus is away on his holidays." What a pity he does not take his vacation in settled weather—mid-winter, for choice!

Yours, &c.,

VIATOR

[A happy contrast to the menu quoted by our correspondent is provided by the following cold collation offered this week by the Southern Railway, for the excellence of which we can vouch:—

3/6 COLD LUNCHEON 3/6

Mayonnaise of Salmon

Roast Beef York Ham
Roast Lamb and Mint Sauce
Veal and Ham Pie
Pressed Beef Ox Tongue
Salad
*(A cut from Hot Joint can be served on request)*

Plum Tart and Cream
or
Vanilla Ice

Cheese Watercress Biscuits

LUNCHEON 2/6
Cold Meat and Salad Sweets or Cheese

Apple –/3 Orange –/3 Banana –/3

Special Black Coffee (to order) ... ... ... ... per cup 4d.

We have recently heard many expressions of satisfaction from travellers at the improved catering facilities now given by the Southern Railway and this line, at any rate, is shown by the above menu to provide both variety and suitability of food for a hot day in early September.—Ed., *R.G.*]

# PUBLICATIONS RECEIVED

**La Direttissima Bologna-Firenze (The Direct Line from Bologna to Florence).** Rome: The Ministry of Public Works. 1934. 12 in. × 8¾ in. 89 Pages, 145 photographs and 6 folding plates. No price stated.—This work, issued to commemorate the completion of the direct line between Bologna and Florence, is excellently printed and illustrated, and has been carefully compiled so as to omit no essential fact from the story. It is 70 years since it was recognised that a better route than that of the tortuous Porrettana line was essential to satisfactory communication, and the history of the various proposals brought forward to that end is set out, followed by a comparison between the characteristics of the new line, the old one and another route, that via Faenza. The work of construction is described in two sections, relating to the time before and that following the advent of Fascism, the money expended in the two periods being 138 and 984 millions of lire, respectively. The methods of construction and the temporary power and conveyor installations are described, and the Appenine tunnel has a chapter to itself, with another devoted to the lines leading to it on each side. Permanent way, electrification work and signalling are also described, and the hydraulic power equipment, telephones and other accessory arrangements.

**The Crimson Jester.** By H. H. Dunn. London, 1934: George G. Harrap & Co. Ltd., 39, Parker Street, Kingsway, W.C.2. 8½ in. × 5½ in. Pp. 315. Illustrated. Price 8s. 6d. net.—We are still too close to the revolutionary period in Mexican history which followed the resignation of President Porfirio Diaz on May 25, 1911, to allot to the many leaders who disputed for power in the ensuing years their precise parts in the country's development. From the academic standpoint, therefore, Mr. Dunn's biography of the Mexican Indian rebel, Emiliano Zapata, suffers for the very reason which makes it such excellent reading. The author, a journalist, won the confidence of Zapata and his staff, rode side by side with him throughout much of his campaign, and was an eye-witness of many of the episodes of barbaric cruelty and grim humour which earned him the title of "The Crimson Jester." The result is the proximity to one revolutionary general has made him do scant justice to the power and influence of others.

Zapata's advance on Mexico City was marked by the systematic cutting of all railway lines running east and west from the capital. Trains were held up and looted if their contents were judged to be of sufficient value, or wrecked with dynamite when they were known to carry government troops. The author records that the name "dynamite catcher" was at this time current for pilot engines.

One is prepared by the title of this book to find considerable attention paid to Zapata's notorious brutality. No reader will complain that he has been disappointed in this respect, though he may be surprised at the esteem for this unprincipled barbarian that shows through here and there in Mr. Dunn's narrative. In fairness to the author, however, it must be recorded that there were curious contradictions in Zapata's character. He had moments of intense generosity (which he could well afford), and it is true to say that during his short occupancy of Mexico City, life and property were safer than they had been for many months. At the same time, white men who encroached upon his territory were impaled on desert thorn bushes and there allowed to remain as a warning to others to keep their distance. Equipped with a secret password and an Indian guide, however, Mr. Dunn escaped this inconvenience and has been spared to write a very dramatic biography of a man who is already something of a legend in his own country.

**Plane and Geodetic Surveying for Engineers. Volume II, Higher Surveying.** By David Clark, B.Sc.(Lond.), M.Inst.C.E. (Second edition revised by Dr. L. J. Comrie, M.A., F.R.A.S., and Lt.-Col. J. E. E. Craster). London: Constable & Co. Ltd., 10 and 12, Orange Street, W.C.2. 8½ in. × 5¾ in. 312 pp. Illustrated. Price 25s. net.—This second volume is complementary to the first, which deals with plane surveying and itself covers higher surveying. It has recently been revised, as the earlier edition had become out of date due to changes in the method of reckoning astronomical time and extensive alterations in the *Nautical Almanac*. The principal subjects dealt with are field astronomy, geodetic survey and levelling, topographical and reconnaissance surveying, and mapping. Chapter I, which, with Chapter II, has been entirely rewritten, is devoted to explanations of the quantities dealt with in astronomical determinations. Examples of the working of the *Nautical Almanac* are also given. Chapter II deals with the instruments and practice of field astronomy as applied to the determination of time, azimuth, latitude and longitude. Chapter III covers the field work of geodetic survey; base measurement by invar tapes or wires is treated at length, as this method is now superseding all others. In Chapter IV, theory of errors, survey adjustment and geodetic computations are dealt with, while geodetic levelling and trigonometric levelling are to be found in Chapter V. The important subjects of topographical, geographical and reconnaissance surveys are treated in Chapter VI. Barometric levelling, which is so essential for railway reconnaissance in difficult and especially in unmapped country, has always been a problem for the railway surveyor. As is rightly pointed out by the author, only by taking simultaneous observations with a field and a base (or camp) aneroid can any accuracy be achieved, and even then corrections and reductions—which are here explained—are necessary. Photographic and aerial surveying are other features of this chapter that will appeal to the railway engineer. In Chapter VII mapping is demonstrated in its various forms. One of the appendices is devoted to mechanical computing, Burroughs and other machines being illustrated and described. Another appendix explains aerial photographic surveying and plotting in some detail.

**Track Circuits.**—The Westinghouse Brake & Saxby Signal Co. Ltd., 82, York Road, King's Cross, N.1, has issued three additional sections for its signal catalogue. These are, respectively:—Section I, A.C. track feed sets; Section K, Housings; Section P, Track circuit insulations. A revised and extended index to the catalogue of the 22 sections published has also been issued.

**British Insulated Cables Publications.**—We have received from British Insulated Cables Limited, Prescot, Lancashire, a list of the publications issued by the firm from 1907 onwards. Those that are now out of print are indicated, and, where earlier editions have been incorporated in other catalogues or substantially revised, this is also shown. Blank pages are provided for entering particulars of new publications as they appear. The same firm sends new leaflets describing pure rubber-covered bell wires, low-tension terminal boxes for outdoor use, and the new busbar and fuse unit which is now being fitted as standard to all B.I. pillars.

**Aluminium Sheet Metal Work.**—The increasing use of railcars has opened up a new field for the application of aluminium sheeting to railway rolling stock construction. In a case where rigidity and lightness are such important factors in design, the metal offers obvious advantages, and that these are becoming generally recognised is evident from the editorial article and description of the Leyland-engined railcar recently built for the Northern Counties Committee (L.M.S.R.) which appeared in the *Diesel Railway Traction Supplement* to THE RAILWAY GAZETTE of June 15. "Aluminium Sheet Metal Work" is a handbook published by the British Aluminium Co. Ltd., Adelaide House, E.C.4, and designed to provide expert guidance upon the working and treatment of the metal and its alloys. Notes on polishing, cleaning and the application of painted or matt finishes conclude the pages of workshop hints. Specifications of the standard sizes of aluminium sheets and circles and tables of properties are included. Among the illustrations in the picture section at the back of the book is one showing an aluminium panelled coach built for the North Western Railway of India.

# THE SCRAP HEAP

In a recent civil action the defendant stated that he was a traveller of twenty years' standing. It appears that he goes to his work by the Underground. —*From "Punch."*

* * *

THEN AS NOW!

"There was a slight decrease in the receipts from the goods traffic, but this was attributed to the widespread depression in trade." A quotation from the report of the directors at the half-yearly meeting—held exactly fifty years ago—of the Buckfastleigh, Totnes, & South Devon Railway.

* * *

"WET" RESULTS IN U.S.A.

Police reports from every "wet" state and community in America ought to open the eyes of those who clamoured for repeal. These data show that arrests for drunkenness have increased by 31 per cent., that automobile accidents due to intoxicated drivers have more than trebled, that murders, suicide and other violent crimes having liquor as their underlying cause are greater than at any time in the past ten years.—*From "The Argonaut," San Francisco.*

* * *

One of the most novel races in the country takes place every week-day on the short section of the L.N.E.R. line between Hatfield and Welwyn Garden City. It is quite unofficial, and a source of great excitement to schoolboys. Two local trains, one bound for Dunstable and the other for Hitchin, leave Hatfield at the same time—just before 5 p.m. In the three-mile run first one takes the lead and then the other. There is scarcely a second difference in the times they draw up alongside adjacent platforms at the Garden City. But the estimate as to which train will "win" has been developed into a fine art by a number of local schoolboys. One in particular during the school term adds a shilling a week to his pocket-money—in pennies. He takes a quiet look at the engine-driver of each train before he "makes a book."

* * *

A district locomotive superintendent many years ago made a practice of holding regular Sunday afternoon meetings of enginemen and cleaners, at which short lectures on locomotive topics were given, questions being afterwards asked and invited. With a view to testing the arithmetical abilities of his hearers he once asked: "If an engine with 6 ft. driving wheels travels a distance of 100 miles, how many complete revolutions do the wheels make on the journey?" In the silence that followed, an elderly driver, who had charge of a small single-wheeler working on a branch was heard to remark to his fireman, *sotto voce*: "Our'n often does a 'undred in six feet, don't it, mate?"

* * *

DIAMOND STUDDED RAILWAY PASS

Railway passes issued to politicians in New South Wales are made of cloth of gold; but a prominent member of the Legislative Council has "improved" his pass—by having it set with diamonds, worth hundreds of pounds. Now he finds that he has one or two conundrums to answer.

"You have infringed the railway regulations," friends told him, "by disfiguring a pass issued by the railway department." But this point has been settled; the railway authorities have intimated officially that they do not intend to "take action in the matter."

The next problem is more disturbing. "What will happen when the time comes for you to return the pass to the railway authorities?" another friend, an influential legal authority, has asked the owner of the diamond-studded gold pass. "It is illegal for you to remove those diamonds now. So as part of the pass, they will become the property of the Government!"

* * *

Pigeons recently stopped trains in the neighbourhood of Stockholm. The birds used the cables for the electric railway on the south side of the city as perches; the result was a short circuit, and the current was cut off for some time. Many trains entering and leaving the southern section of Stockholm station were more than an hour late.

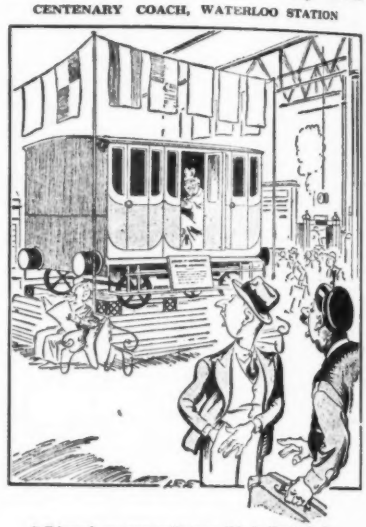
* * *

A stoppage of about an hour was caused recently on the L.M.S.R. at Long Itchington, near Leamington, because of the wanderings of an earwig. No reply could be got from Marton junction on the electric apparatus, so the stationmaster of Long Itchington walked to Marton to trace the cause. Here it was found that an earwig had got between the plates of the electric apparatus.—*From the "Birmingham Post."*

*Like George Stephenson's cow an elephant which tried conclusions with an express on the Federated Malay States Railways got the worst of it*

## LONDON LAUGHS . . *By* LEE

CENTENARY COACH, WATERLOO STATION



"Edward, are you quite sure this is the train for Godalming?"

*The Bodmin and Wadebridge coach at Waterloo, decorated for the centenary proceedings last week, as seen by the "Evening News" cartoonist*

# OVERSEAS RAILWAY AFFAIRS

*(From our special correspondents)*

*The future of the North-Western of Brazil and Paraná Railway construction—Road traffic agreement in New Zealand—The Berne Convention—Measures to make Indian rail transport more attractive—The "combine" for U.S.S.R. railway maintenance—Spanish railways and the new bill*

## BRAZIL

### Rationalisation of Transport

One of the last decrees by the Chief of the Provisional Government authorised the Minister of Communications to set up a permanent commission, with headquarters in Rio de Janeiro, to draw up and put into effect a scheme for the co-ordination of railway, air, road and water services. The commission has already been nominated, and consists of engineers of the Federal Inspectorate of Railways.

### North-Western of Brazil Railway

A decree has recently been issued, empowering the Federal Government (as owner and operating agency of this railway), the State of São Paulo (owners of the Sorocabana Railway) and the Paulista Railway Company to draw up a contract amongst themselves, or in conjunction with an association organised by the two latter, with a subscribed capital up to 40,000 contos (contributed in quotas by the contracting parties), for the purpose of effecting various improvements on the Noroéste, which serves a rich coffee zone and, in the height of the season, hands over a valuable traffic to the other two railways concerned at Baurú junction. Among the improvements contemplated are drainage-work in the swampy areas of Matto Grosso (at the farthest extremity of the system); replacement of all temporary bridges, by modern structures; acquisition of locomotives and rolling-stock necessary for the development of traffic; and the reconditioning of the line, in the shape of relaying, stone-ballasting and the construction of spur-lines and avoiding-routes.

### Madeira-Mamoré Railway

This railway runs from Porto Velho on the right bank of the Madeira River, on the borders of the States of Amazonas and Matto Grosso, and follows this river as far as Abunã, close to the confluence of the three rivers Madeira, Abunã and Mamoré. Beyond this point it parallels the last-mentioned river (which forms the boundary between Bolivia and the State of Matto Grosso) all the way to Guajará-Mirim, the total extent of the system being 366 km. Principal traffics, which are shipped from Porto Velho by river to Manáos and thence up the Amazon to Belém do Pará, consist of rubber, hides, Brazil nuts and livestock. A fact worthy of note is that the shortest distance between England and Bolivia (11,000 kilometres odd) is by way of Belém do Pará, Manáos and the Maderia-Mamoré Railway.

For three years or so this railway has been in Brazilian hands, and now a decree has been signed authorising the revision or amicable cancellation of the contract between the Federal Government and the company, the Government having the prerogative, in the event of failure to come to terms, to declare it null and void. Should cancellation eventuate, the Government will undertake the administration of the line.

### São Paulo-Paraná Railway Construction

This new line of railway starts from Ourinhos, which is on the borders of the states of São Paulo and Paraná, and is 500 km. distant by the Sorocabana Railway from São Paulo City. It has, for its ultimate objective, the linking-up of Brazil and Paraguay. So far, in spite of numerous technical difficulties which involved a heavy capital outlay, the railway has succeeded in advancing 184 km. to the town of Jatahy, situated on the right bank of the river Tibagy.

Rangel, Christophel & Co. have contracted to construct the bridge over this river, which will consist of 13 20-m. and two 17-m. reinforced concrete spans supported by r.c. piers taken down to bed rock. Though the line is metre gauge, this bridge is designed for its conversion to broad gauge. While the preliminaries of this work were being settled, construction was pushed forward beyond the bridge a further 26 km., and already some 20 km. of track have been laid.

When completed this line will form an international link which is expected to be of considerable value to Brazil, for, in addition to shortening the distance between her industrial and agricultural centres and the markets in northern Argentine and Paraguay, it will, through the opening of an accessible port on the Paraná river, cheapen transportation considerably, eliminating the present costly and circuitous journeys by sea and the River Plate. In addition, the new link will place the Federal and Provincial capitals in direct communication with a zone and also a frontier hitherto completely inaccessible for lack of communications. It is confidently expected that before long the São Paulo-Paraná Railway will become one of great transcontinental systems of the world, by connecting the Atlantic coast of Brazil with the Pacific coast of Chile and Peru.

It is satisfactory to note that deficits registered in previous years gave place to a small surplus during 1933, the actual figures for the financial year, announced at the company's general meeting on June 30, being: Gross receipts, 1,705 contos; Expenditure, 1,701 contos.

## NEW ZEALAND

### Road and Rail Competition

In July of last year an agreement was made between certain of the road transport companies operating between Wellington and Palmerston North (87 miles), and the railways. The rail rates for A, B and C classes of commodities (*i.e.*, general merchandise) were 64s. 2d., 53s. 4d. and 44s. 4d. a ton respectively, while the road rates were about 55s. a ton. With the advent of keener competition, a period of rate-cutting ensued, starting in December, 1927, when road operators kept their rates a little lower than those of the railways. In 1933 the railway rate reached £2 a ton, including in certain cases both collection and delivery. The road rates varied from £2 to 30s. with a few special low rates of about 20s., the average rate appearing to be in the vicinity of 35s. At this stage the majority of higher rated traffic was going by road, and it was estimated that only about 10 per cent. was being carried by rail. If further rate-cutting had continued, a stage would have been reached where the railways would have forced their competitors off the road by virtue of their greater staying powers. It was evident, also, that by the time this situation arose, much economic loss would have occurred and the railways would probably be carrying goods at an unremunerative rate.

As a result of negotiations an agreement was reached, the main points of this being that the railways undertook to carry the goods offered and loaded by road operators at £4 10s. a truck. The trucks were to vary from 8 to 12-tons capacity, the road operators to cease competition where practicable and the minimum number of trucks to be eight from each firm a week. Two companies accepted the scheme, these being the only ones sufficiently interested, or who were handling enough business to avail themselves of eight trucks weekly. A total of 9,686 tons has since been carried, an average of 7·74 tons a truck, which gives a rate of 11s. 7d. a ton and 1s. 6d. a ton-mile. The cost of collection and delivery is reckoned at about 7s. a ton, so that the cost to road operators would be from 15s. to 20s. and would average about 18s. 6d. a ton. Practic-

ally the whole of the goods that previously went by road has been diverted to the rail. During eight months the railways had an estimated increase in revenue of £2,000. The system may be extended to other areas of competition, *e.g.* Auckland to Hamilton (87 miles south) and Auckland—Whangarei (130 miles north).

# ITALY

### The Berne Convention, C.I.V. and C.I.M.

The Berne Railway Convention (Convention Internationale pour Voyageurs and Convention Internationale pour Marchandise, C.I.V. and C.I.M. resp.) at the quinquennial meeting in 1928 stipulated that regular road and water transport services might be admitted to the convention if they supplemented railway services. According to the latest figures published on October 1, 1933, the following total and Italian services now come under the C.I.V. and C.I.M. respectively:—

| | Under the C.I.V. | | Under the C.I.M. | |
|---|---|---|---|---|
| | Total | In Italy | Total | In Italy |
| | Km. | Km. | Km. | Km. |
| Railways .. | 220,158 | 29,011 | 254,946 | 18,799 |
| Road services | 2,185 | 1,027 | — | — |
| Water services | 15,026 | 10,448 | 813 | 30 |

It will be noticed that not a single road service comes under the C.I.M., but in consequence of the substitution of a road service for the Mandela-Subiaco railway (25 km.), the Ministry of Communications has applied to the Berne bureau for this motor service to be admitted to the C.I.M. instead of the railway. In pursuance of its policy of road-rail co-ordination, Italy is thus the first country to have a road motor service under the rules of the C.I.M.

### Private Wagon Owners' Federation

The General Assembly of the International Federation of Private Owners of Railway Wagons was recently held in Rome. Latest figures in this connection show that about 10 per cent. of the rolling stock on the Continental railways is privately owned. Italian privately-owned wagons number 8,000. The assembly discussed current affairs and particularly the old problem of regulating the international traffic of privately owned trucks, a problem to which the Berne Convention has so far found no definitely satisfactory solution.

### Holiday Traffic

August 15 is Assumption Day, one of the great Roman Catholic holidays, and the holiday season in Italy begins on the previous Saturday. Milan had to cope with an extraordinarily heavy traffic between the Friday night and Sunday morning, when some 200,000 passengers left Milan Central station, and a further 50,000 travelled by the Northern Railway. The booking office at the Central Station alone sold 104,000 tickets amounting to 2,300,000 lire.

The success of the Popular Sunday trains has reached unexpected proportions. From a report published on August 17 it appears that since the beginning of the season, on June 3, 1,317,000 passengers have travelled by these trains, and there were then still a further seven Sundays and holidays before the end of the season on September 30. Last year the total number of passengers was 871,000 for the whole season.

### Minister Visits Children's Holiday Colonies

The Minister of Communications, Signor Puppini, recently visited the seaside colony of railwaymen's children at Calombrone near Pisa and inspected the building and all the arrangements. As the thousands of children were just flocking back from the sea shore for luncheon, the Minister decided to partake of it. In the afternoon he inspected the other colonies at Pisa Marina and Tirrenia which are also occupied by some thousands of railwaymen's children.

# SAAR

### Extent of Railways

The railways in the Saar Territory, which are shown on the accompanying map, comprise some 316 km. (196 miles) of what was formerly the Saarbrücken Division of the Prussian State Railways, and 86 km. (53½ miles) of route which belonged to the Palatinate Division of the Bavarian State Railways. These two systems are now worked with the title of the Saar Railways, by one administration from headquarters at Saarbrücken. This administration derives its authority solely from the Governing Commission of the Saar Territory appointed by the League of Nations. There are also in the Saar Territory about 35 km. (21¾ miles) of railways which are worked by the Alsace-Lorraine Railways Administration. These comprise the following sections:—

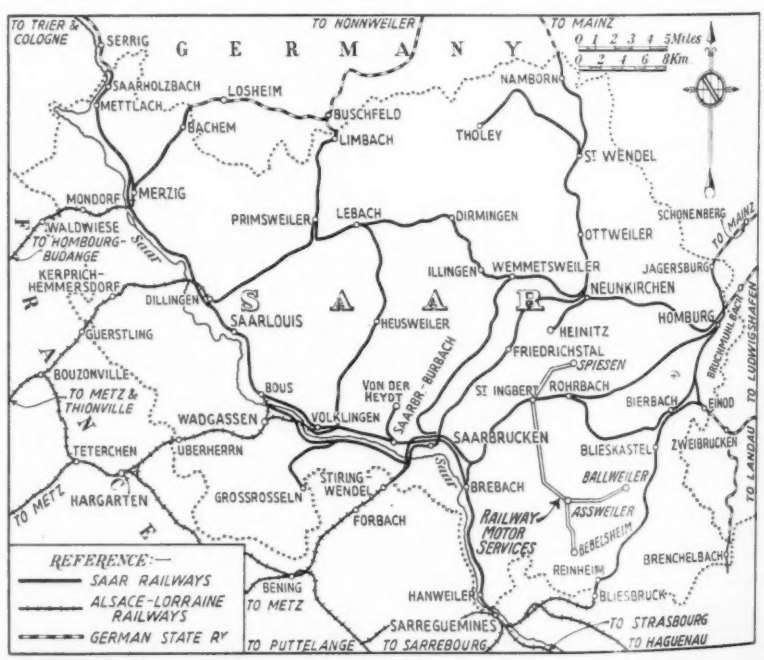
| | Opened |
|---|---|
| Überherrn–Wadgassen .. | April 1, 1880 |
| Wadgassen–Bous .. .. | April 1, 1880 |
| Wadgassen–Völklingen .. | April 1, 1881 |
| Guerstling–Dillingen .. | July 1, 1901 |
| Waldwiese–Mondorf–Merzig | November 1, 1917 |

[We comment editorially on page 420 on the position of the Saar Territory and its railways, in view of the forthcoming plebiscite which is to decide the future of the government.—ED. *R.G.*]

# INDIA

### Popularising Railway Transport

The Railway Board has circulated to the various railway administrations a memorandum drawn up by the Central Publicity Officer, Indian State Railways, and containing suggestions for popularising railway transport. The note says that cheaper rates and door-to-door services are two advantages of road transport. The railways should see how far rates can be reduced or adjusted so as to bring them as near as possible to road rates. Prompt booking, quick transport and immediate delivery at destination are features which have received considerable




*Railway map of the Saar Territory*

attention on British railways. The Central Publicity Officer suggests that the question of collection and delivery of goods to and from merchants' godowns in large towns is well worth investigating. The delivery of goods immediately on arrival at destination would prevent damage and remove opportunities for pilferage. Claims against railways would thus be reduced. Lorries used for collection and delivery might be painted in bright colours to attract attention to this special service. The Publicity Officer recommends that a railway commercial officer should visit every station in his district from time to time to establish personal touch with merchants, who should be encouraged to lay their difficulties before the railway. The principle to adopt is not to criticise destructively, but to examine and discuss each case frankly with a view to effecting possible improvements.

Many of the suggestions made in the memorandum are already being acted upon as the railways have long realised that they cannot afford to sit still and wait for traffic to turn up. The Central Publicity Officer has, however, done well to draw attention to the importance of goodwill in the sale of transport, as stray cases are sometimes —correctly or incorrectly—reported of railway officials treating the public cavalierly. Road competition in the transport of goods is yet negligible and it is up to the railways to nip the danger in the bud by keeping ready at hand a quick, efficient and economical service by rail.

## U.S.S.R.

### The Use of "Combines" on Railways

In common with the Agricultural and other Departments in the U.S.S.R., what are known as "combines" are now in evidence upon the railways of the Soviet Union. A "combine" consists of a group of machines forming a combined unit or group of co-ordinated, and usually portable units for specific work. For instance, there are track maintenance combines for drainage and formation correction, side ditching, sleeper changing, lifting, straightening and packing of the track. Then there are relaying combines, bridge combines for bridge renewals and repairs, ballast combines and snow combines for clearing the track of snow.

### Track Maintenance "Combine"

A track maintenance combine is composed of three trains each with a locomotive, and having different machines mounted upon the trucks. One of these machines cuts a drain 20-30 cm. in diameter on each side of the track to improve drainage. If necessary, it also fills in these drains with fascines of tree loppings. The machine itself has two knife-like arms set to a definite depth below formation level, each of which draws behind it a cylinder with a sharp point for cutting a circular drain in wet ground inclined to swell due to frost. It also pulls the fascines into the drains. A second machine levels the formation under the sleepers and removes water pockets, while a third trims off the side slopes and drains, or digs new ones.

The second train has one machine for lifting and one for packing the track. Another pair of machines work together, one removing old from, and the other drawing new sleepers into the track. These machines have attendant wagons, one to receive the old sleepers and one for the new ones. The method of operating these machines is as follows: The track is first lifted so that the sleepers are clear of the bed, the spikes are drawn and then special tongs grip the old sleepers, draw them out and load them into the empty truck. Then the track is again lifted and the grips of a band-conveyor take new sleepers from the second truck and bring them forward into place. After respiking the track is dropped and the lifting and packing machines complete the job. The third train has machines for track adjustment and ballast dressing.

### Method of Working

The three trains follow one another at from 3-6 m.p.h., but between them run ballast trains of platform trucks, on each of which are two rows of box containers. Between these two rows are wedge-shaped contrivances connected by cables with the locomotive, and such that when drawn forward they lift up the containers sufficiently to empty them, the side flap securing bolts being opened automatically.

### Results of Trials

This combine is said to have given complete satisfaction on trial and to have had the effect of replacing 3,000 men, when working at a speed of 3 m.p.h. Trials with the ballast combine are also said to have been successful. It works with an excavator, feeding a conveyor transporting the ballast to the special wagons. At present the other combines are not at work, but by the end of the second five year plan, in 1937, the following are expected to be in use: 22 track and 22 ballast combines and 10,000 wagons for maintenance; 20 track and 20 ballast combines and 4,800 ballast wagons for relaying; and also 42 track construction combines.

## CZECHOSLOVAKIA

### Improved Railway Receipts

A welcome improvement has been registered for the first half of the current year in the traffic receipts of the Czechoslovak State Railways, which, during the world financial crisis, have shown large annual deficits and proved a heavy burden for the budget. The total earnings in June were 229 million crowns, or 10 million (4·5 per cent.) more than in June, 1933, while for the first six months of 1934 the total receipts were 1214·3 million crowns, an improvement of 32·3 millions, or 2·7 per cent. on the figure for the first half of 1933. Passenger receipts, owing to reduced fares and a series of fresh facilities, declined, despite the fact that an increased number of passengers was carried. The receipts amounted to 328·1 million crowns, or 23·6 millions less than in the first half of 1933, but the number of passengers carried rose from 95,000,000 to 99,000,000. Receipts from luggage also declined slightly, while those from express deliveries increased somewhat. The freight carried during the first half of the year totalled 17,172,932 tons, an increase of 990,166 tons on the corresponding period of 1933, while the receipts amounted to 836·8 million crowns, or 55·8 millions more than in 1933.

## SPAIN

### The Railway Bill

The Northern of Spain and the M.Z.A. Railway Companies have now published jointly a pamphlet containing their report to the Parliamentary Commission on the Railway Bill which was read in the Cortes for the first time on June 21. This report of the two principal companies has given rise to a considerable amount of comment in railway and Government circles in Madrid, and also to several articles in the Madrid daily press. Both in the report of the two companies and in the press comments which have followed its publication, it is pointed out that the form of the Bill gives rise to the supposition of some deepseated antagonism on the part of the authors of the measure against capital in general and railway capital in particular. The report works out in detail the effect of the application of the Bill to their respective lines, from which it appears that, if the State were to exercise its rights under the Bill and rescind the concessions of the two companies, applying all the deductions provided for in the Bill, the companies would only receive an amount sufficient to cover about 25 per cent. of the nominal value of their share and debenture capital. This is characterised as very little less than spoliation. Later, however, an article has appeared in the Madrid daily *El Sol* evidently inspired from some official source, as it is to the effect that the interpretation adopted by the two big companies is erroneous, and that if the intentions of the Government are correctly understood, the Bill will be found to provide an eminently just and equitable solution of the railway problem, and the procedure laid down for the rescission of the different concessions will provide quite enough to pay off the whole of the capital, both share and debenture, at its par value. *El Sol* promises a further article on this subject and this is awaited with great interest, as it is very difficult to see how the authors of the Bill can derive any other interpretation from it than that adopted by the companies.

# NORTH ISLAND MAIN TRUNK LINE, NEW ZEALAND

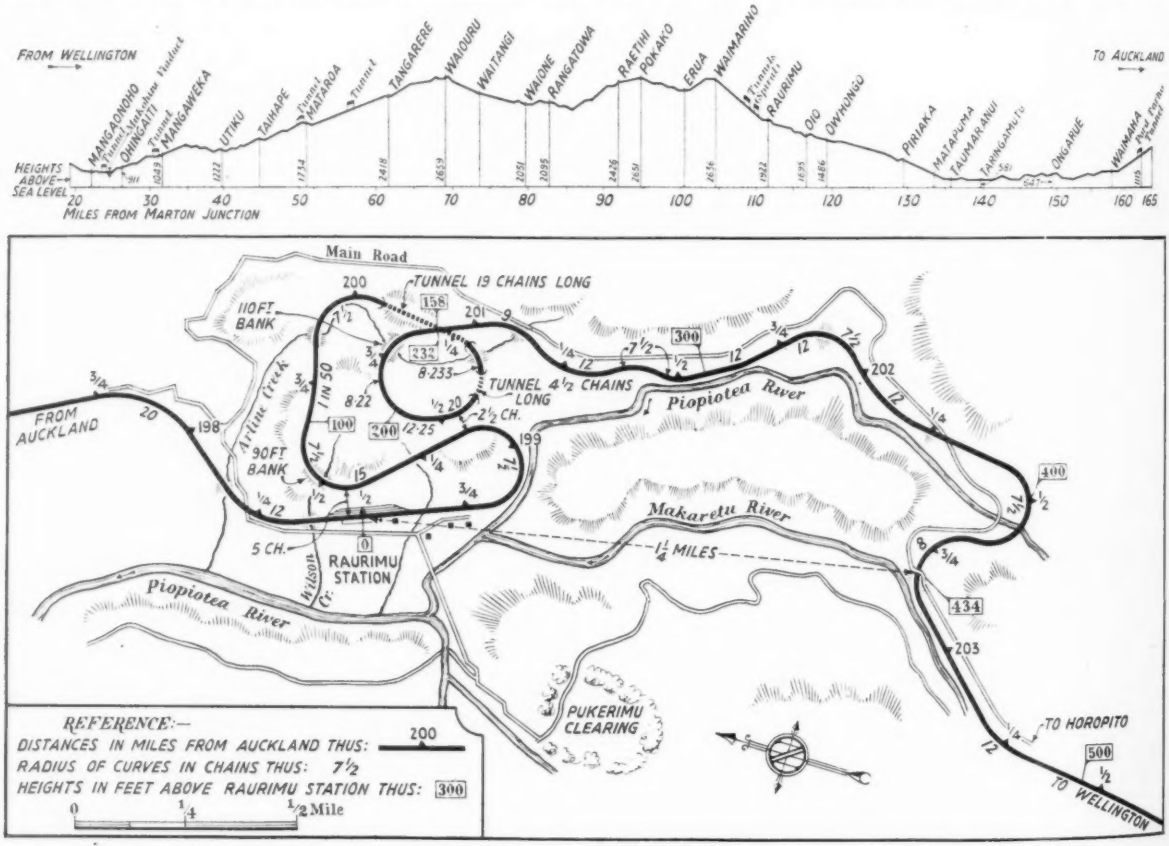
## *Describing engineering features, including the Raurimu spiral, topographical characteristics and scenic charm*

THERE are few countries in the world where, in the construction of a main trunk inter-city route, it has been found essential to adopt the spiral form of alignment coupled with 1 in 50 grades, 7½-chain radius curves, long and numerous tunnels and lofty trestle viaducts, in order to circumvent the extremely difficult topography encountered. But one of these is New Zealand, the capital of which, Wellington, is connected with the northern city and port of Auckland, at the other end of North Island, by just such a main trunk section of the Government Railways, 426 miles in length. Throughout the greater part of this distance mountainous country is traversed and the engineering difficulties which faced the survey and construction engineers were many and varied. These necessitated the boring of 32 tunnels, varying in length from 250 to 3,515 ft. and the building of 22 viaducts and large bridges. Of the latter, five are over 100 ft. in height above their river beds, two are over 200 ft. high and one, the Makatote Viaduct, 860 ft. long, is 260 ft. from stream bed to rail level, its length being 860 ft. The lengths of the others vary from 200 to 1,185 ft. From the longitudinal section of the more difficult section of this line, it will be noticed that southbound trains from Auckland to Wellington have to face a climb of over 2,000 vertical feet concentrated in the 32 miles between Taumaranui (560 ft.) and National Park (2,636 ft.) and it is here that the spiral above Raurimu and some of the heaviest engineering works were necessary.

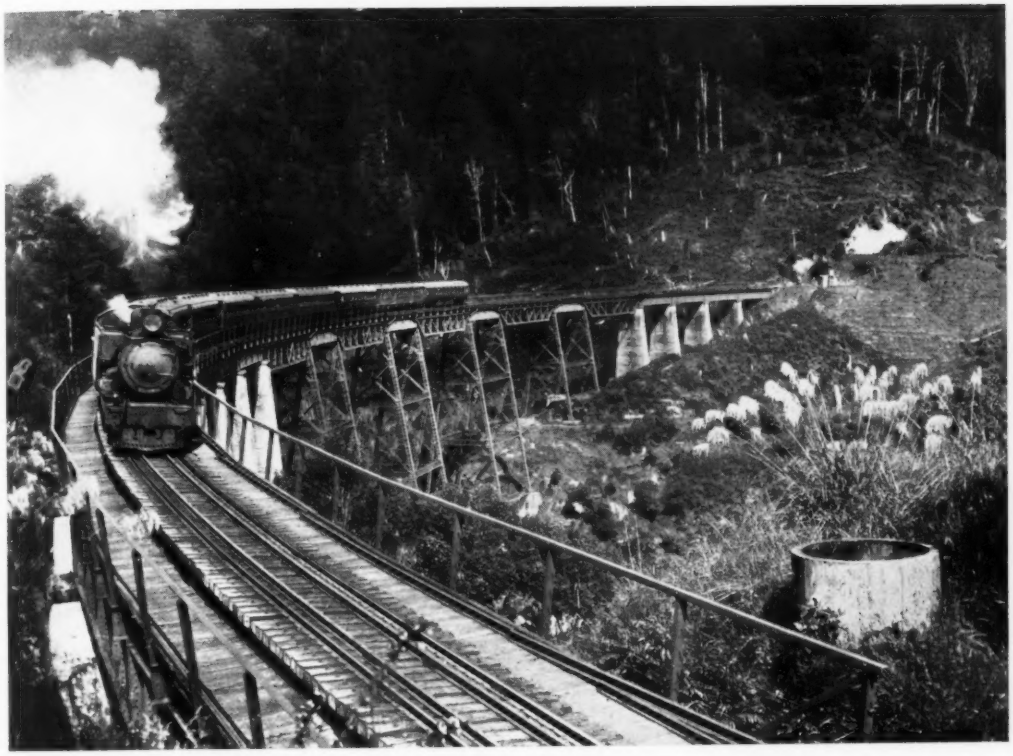
Actually the highest point on the line is at Waiouru, some 35 miles south of National Park, the line undulating between 2,000 and 2,650 ft. in the intervening distance. From Waiouru the long descent shown on the section terminates not far from Palmerston North, 103 ft. above sea level. In spite of the steep gradients and sharp curves, so high is the standard of construction and maintenance that an average speed of 29·6 m.p.h. is maintained throughout these 426 miles of 3 ft. 6 in. gauge line between Wellington and Auckland and *vice versa*, by the Limited expresses.

### The Raurimu Spiral

The principal features of the Raurimu spiral can be seen from the plan reproduced and from the longitudinal section. It will be noticed that in a horizontal distance of under a quarter of a mile measured as the crow flies, the line climbs 200 vertical feet between Raurimu station




*Above: Rough profile of the 145-mile hilly portion of the main trunk route between Wellington and Auckland, North Island. Below: Plan showing spiral and other development on the Raurimu ascent, main trunk route. Note the climb of just 200 ft. vertically, in a distance of less than a quarter of a mile as the crow flies from Raurimu station*



*Hapuawhenua Viaduct, 147 ft. in height and 932 ft. in length*

*Makatote Viaduct, near Raurimu spiral*

and the nearest point on the spiral curve. The 1 in 50 gradient here used is not the only one on the main trunk line and until the Tawa Flat deviation, described in THE RAILWAY GAZETTE of November 10, 1933, with its 1 in 100 ruling gradient, was opened, there was a 1 in 36 climb out of Wellington. Train operation over the spiral section therefore calls for no special locomotive power.

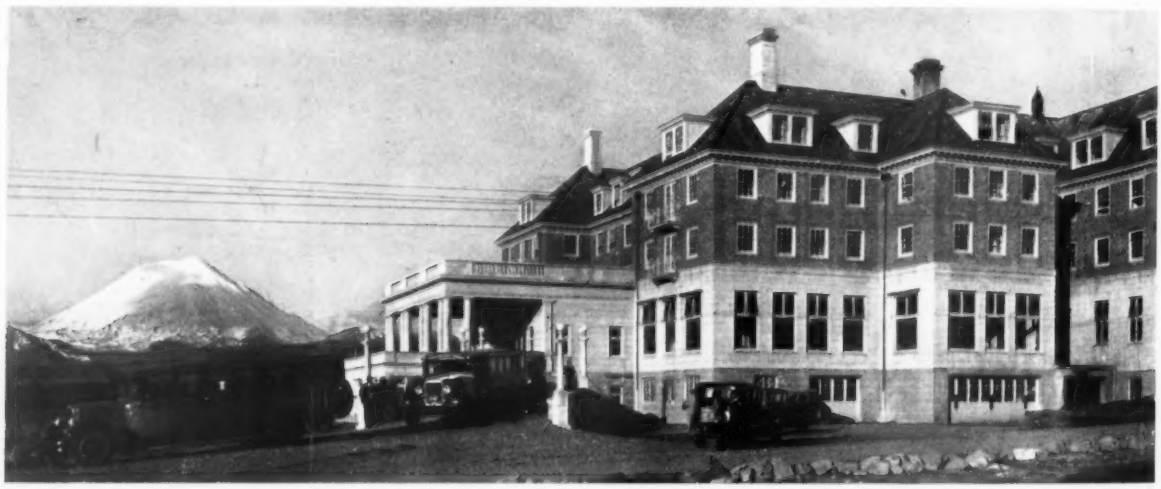
### Tourist Attractions

The construction of this remarkable line was essential to the proper development of the economic resources of the Dominion, but in addition, it forms a fascinating attraction to tourists and visitors from every country. Some idea of its scenic beauties may be gathered from the following extracts from the New Zealand Government Railways booklet, *Romance of the Rail*:—

"Having negotiated the spiral and attained the high breezy plateau of Wamarino we enter the charmed region of grand volcanic mountain landscapes, the most wonderful region in the North Island. We get our first views of the sacred mountains of old, the Tongariro Range, its active volcano Ngauruhoe (7,515 ft.); and the perpetually ice-capped giant Ruapehu (9,175 ft.), the highest point of the island and its only glaciated peak. At an altitude of 2,636 ft. we reach the boundary of the Tongariro National Park, a noble scenic sanctuary of nearly 150,000 acres, containing the three famous mountains and several lakes, large areas of forest, and great expanses of subalpine meadow, spangled with flowers in the spring and summer. From National Park station a motor-road runs to the heart of the Park, Whakapa Cottage Camp, thirteen miles from the railway.

"Noble are the pictures which the smoking and icy mountains present to the traveller, especially on some fine summer morning as one emerges from the forest and opens out the first prospect across the Waimarino Plain. Ngauruhoe, with its perfect symmetrical cone lifting steeply 3,000 ft. from the rocky plateau, is the first feature to capture the eye; the curl of yellow or white steam, or often black smoke, from its crater indicates its never-dying fires below. As we go eastward, Ruapehu's snowy peaks make glorious pictures through the gaps in the forest or between the hill-spurs. There is a point where, if the atmospheric conditions be favourable, you may see Ruapehu filling the end of a narrow bush canyon, eastward, and looking quickly in the opposite direction, see Mount Egmont's blue and white cone seventy miles away in the west. This is when you cross the Makatote stream by the greatest railway-bridge in the island, a steel structure bedded on concrete, 864 ft. long, spanning a gorge 260 ft. deep. The swift rivers flowing from the west and south slopes of Ruapehu through the dense forest have cut deep gorges in the ash and pumice and rock of the plateau, and these sharply eroded channels are very beautiful with their fringes of bush and ferns. These rifts were the reverse of beautiful to the railway engineers, who found themselves blocked every few miles by a huge gulch, necessitating a costly bridge of steel and concrete. The Manga-nui-o-te-Ao ('the great river of the land') is one of these alpine torrents; it is a large river by the time it joins the Wanganui, seven miles above Pipiriki. The Hapuawhenua stream is crossed by a viaduct, remarkable not so much for its great length (nearly 1,000 ft.) as for its shape; it is curved laterally in crescent form.

"As a centre where a halt may be made from which to enjoy these scenic attractions, the Government Hostel of National Park, Chateau Tongariro, is unrivalled. It can easily be reached by road from National Park station."



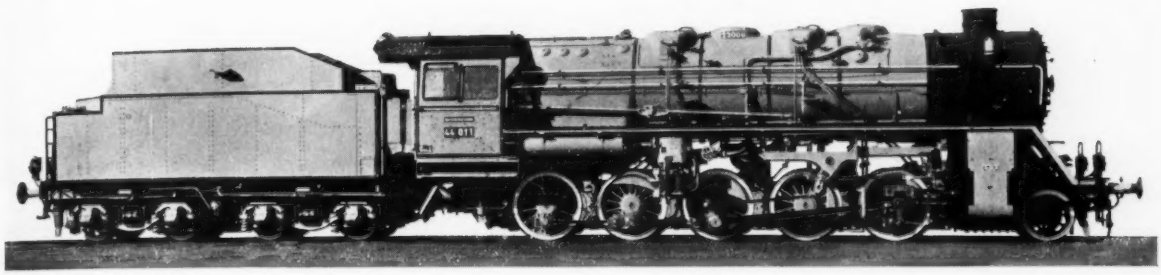
*Chateau Tongariro, the Government hostel at the National Park in the centre of the North Island, with the volcano, Ngauruhoe, in the background. National Park station is at the summit of the Raurimu incline*

---

WELDING FOR STEEL STRUCTURES.—Mr. Ewart S. Andrews, President of the Institution of Structural Engineers, speaking last week at a demonstration in miniature of oxy-acetylene welding, when the framework was completed for the British Oxygen Company's stand at the Building Exhibition at Olympia, said that too much time had elapsed in persuading the Government, the local authorities, and particularly the L.C.C. that welding for structural steel work was a process to be encouraged. There was not the slightest doubt that it would revolutionise structural steel work, and he thought that before many months had passed the L.C.C. would give an opportunity to structural engineers of proving what could be done in the way of welding. It was more economical, a building so constructed was stronger and more rigid, the builder could follow more faithfully the lines of the architect, and the process was practically noiseless. The maintenance of riveting was also obviated.

# NEW GERMAN-BUILT TEN-COUPLED GOODS LOCOMOTIVES

***The 2-10-0 goods locomotives, built by Henschel & Sohn A.G., Kassel, for the German State Railway, are the heaviest in use in Germany***



THE German State Railway Company ordered last year several new types of locomotives distinguished by the use of boiler pressures of 25 atmospheres (355 lb. per sq. in.). Two 2-10-0 four-cylinder compound engines, intended for heavy goods service in mountainous country, were recently delivered by Henschel & Sohn A.G., Kassel, one of them, it may be noted, being the 22,000th machine to leave these works. The design and construction of the new locomotives were undertaken in close co-operation with the railway, and special high-tensile steels were adopted for the boilers in view of the high steam pressure employed. Compared with the standard goods locomotives of the Reichsbahn, the four-cylinder compound engines show an increase in tractive effort of 10-15 per cent., and they are capable of a maximum speed of 80 km. (49·7 miles) an hour.

As will be seen from the accompanying photograph the motion and other working parts are readily accessible.

The tender is of the eight-wheeled type, weighing about 32 tons empty and 73¾ tons in working order. The total weight of engine and tender in working order thus amounts to about 186½ tons, making these the heaviest locomotives at present in use on the German State Railway. The special equipment includes two thermic syphons in the firebox and a complete installation of electric lighting. Before being taken into regular service, these machines underwent numerous trials at the Grünewald research station, with completely satisfactory results.

The leading dimensions of the locomotives are:—

| | |
|---|---|
| Cylinders, diam., h.p. .. .. | 420 mm. (16½ in.). |
| ,, ,, l.p. .. .. | 680 mm. (26¾ in.). |
| ,, stroke .. .. .. | 660 mm. (26 in.). |
| Coupled wheels, diam. .. .. | 1,400 mm. (4 ft. 7 in.). |
| Bissel wheels, diam. .. .. | 1,000 mm. (3 ft. 3½ in.). |
| Boiler working pressure .. .. | 25 atmos. (335 lb. per sq. in.). |
| ,, heating surface, tubes and flues | 203·0 sq. m. (2,184 sq. ft.). |
| ,, ,, ,, firebox .. | 22·2 sq. m. (239 sq. ft.). |
| | 225·2 sq. m. (2,423 sq. ft.). |
| ,, ,, ,, superheater | 124·7 sq. m. (1,342 sq. ft.). |
| Total .. .. .. .. | 349·9 sq. m. (3,765 sq. ft.). |
| Grate area .. .. .. .. | 4·7 sq. m. (50·6 sq. ft.). |
| Wheelbase, total engine .. .. | 9,650 mm. (31 ft. 8 in.). |
| Weight of engine in working order | 114·5 metric tons (112¾ tons). |
| Adhesion weight .. .. .. | 100·0 metric tons (98½ tons). |
| Tender, weight in working order .. | 75·0 metric tons (73¾ tons). |
| Water capacity .. .. .. | 32 cub. m. (7,040 gall.). |
| Fuel capacity .. .. .. | 10 metric tons (9 tons 17 cwt.). |

*Interior views of platelayers' hut and store at Northfields, London Passenger Transport Board.* *See editorial note on p.* 419

*Passengers transhipping from one side of a washed out bridge to the other. Note the complete disappearance of several masonry piers and girder spans and a temporary pier erected towards the right of the picture*

*Above : A typical breach, the embankment washed away and track hanging in festoons. Below : Girders washed away from a bridge, twisted through 360°—as proved by the rails—and thrown up on the river bank. Note the sun glare on the sand*

*Temporary all-steel bridge—designed, fabricated and erected in record time—in place of a permanent bridge which was practically washed away*

*FLOOD DAMAGE AND RAPID REPAIRS ON THE NORTH WEST FRONTIER, INDIA*

# KALABAGH-BANNU SECTION FLOOD DAMAGES, N.W.R., INDIA

***Recent heavy rainstorms have caused sudden spates in many streams on the North West Frontier with the serious results shown below. Repairs were effected in record time***

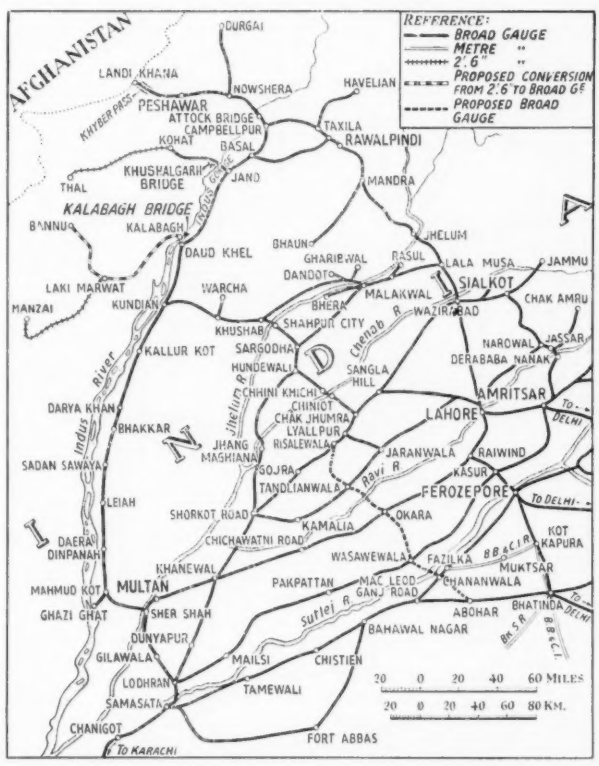
*View looking along centre line: only signal and warning posts, one on each side of the track, are visible above the deposit of silt. Note the trolley*

*Two abutments and only one pier of this bridge have survived. One of the girder spans may be seen in the river bed and another thrown up on the bank in the middle distance, with a man upon it. This is typical North West Frontier country*

IN the Overseas columns of THE RAILWAY GAZETTE, published on August 24, mention was made of these floods and of the damage they caused recently. Mr. R. O. C. Thomson, M.C., A.M.Inst.C.E., Divisional Engineer (ii), Rawalpindi, has now sent us some rather striking photographs of the results of three downpours of rain in 1933 and 1934 on this 89-mile section of 2 ft. 6 in. gauge line, beyond the Kalabagh bridge, the construction of which was recently described in detail in our associated contemporary *The Railway Engineer*. The accompanying map shows the position and alignments followed by the main and branch lines forming this narrow gauge section, which serves a semi arid tract on the North West Frontier of India, with mountainous country to the north and north west.

The average annual rainfall is about 12 in., but it has been calculated that fully half this quantity fell during the cloud burst of July 8, 1934, in an hour. Owing to its proximity to the "hills" (barren ranges up to about 4,000 ft. in height) this link with the Frontier is particularly vulnerable to sudden spates. These carry great quantities of silt and are continually changing course, so that it is never possible to tell where a breach of the line may occur. When it is mentioned that these destructive cloud bursts occur during the hot season when the country is little better than a flaming furnace by day and an oven by night, that within a few hours of the occurrence of a flood the torrent beds are dry and the sun is once more blazing down, some idea can be formed of the conditions under which repairs have to be carried out.

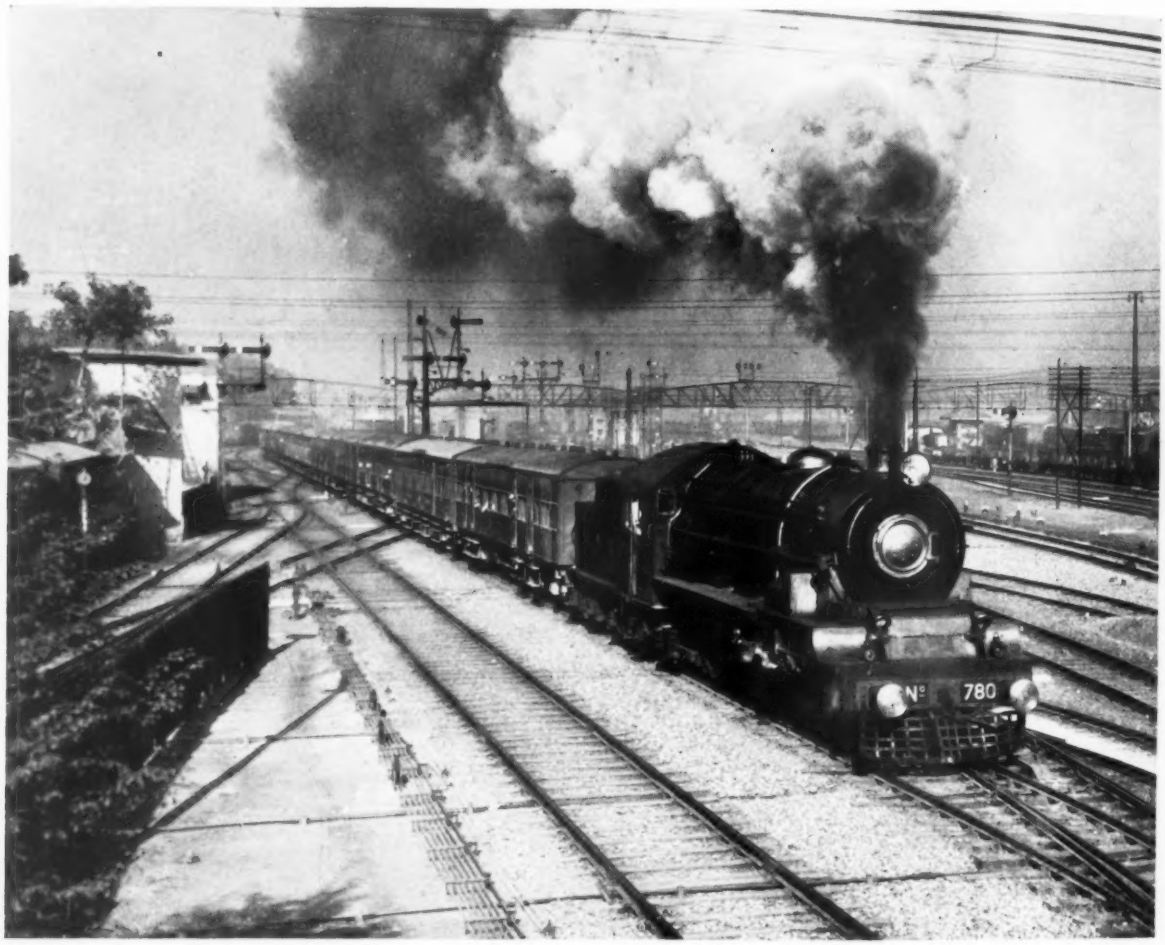
Immediate repairs consist in restoring communication by every available means, and in this connection some of the accompanying illustrations showing a bridge of 44-ft. spans on adjustable steel stagings, designed, fabricated and erected—from rough sketch to complete structure—in less than two weeks by the staff of the Bridge Engineer of the North Western Railway acting in co-operation with the engineering maintenance staff, are not only of particular interest, but also illustrate what must constitute something in the nature of a record of its kind. The work of permanent repairs, often involving many interesting and novel problems, is usually deferred to the dry and less inclement months of the cold weather.




*Map showing Kalabagh-Bannu section, N.W.R.*

# A MODERN LOCOMOTIVE AT A BUSY CENTRE IN INDIA

*One of the 4-6-2 four-cylinder simple expansion express locomotives of the North Western Railway working the Karachi mail out of Lahore*




THE illustration above shows No. 8 down Lahore-Karachi mail leaving Lahore hauled by "XS" Pacific type locomotive No. 780. On the N.W.R. there are four four-cylinder poppet valve 4-6-2 simple expansion engines, two having R.C. valve gear and two being equipped with the Caprotti gear. Of the former, one has its cranks set normally at 90°, and the other, No. 780, has them set at 135°, giving eight beats to a revolution of the coupled wheels. These four locomotives were illustrated and described in THE RAILWAY GAZETTE of April 25, 1930, and in the issue of September 15—just a year ago—some details of dynamometer car trials, in which they successfully competed, were also given. The use of four high pressure cylinders in combination with poppet valve gear has, in fact, proved very satisfactory in India as in other countries. This is borne out by the use of No. 780, as depicted in the illustration, hauling the heaviest daily express out of Lahore, the headquarters of the N.W.R., the load behind the tender amounting to 14 heavy bogie coaches, weighing without passengers, mails, luggage and parcels some 500 tons, or probably 600 tons all told.

Incidentally this illustration gives a good general view of the down end of Lahore yard. The lines to the extreme left lead to the 10-track carriage washing and stabling grid: the six lines in the foreground are the main passenger tracks leading from the passenger station (out of sight in the background) to (*a*) Raewind, Multan and Karachi, (*b*) Raewind, Ferozepur and Delhi, and (*c*) Amritsar, Ambala, Delhi and to Saharanpur and Lucknow. Next to the right are the locomotive yard approach and exit lines, the solitary signal controlling the latter. The engine shed accommodates over 170 locomotives.

Beyond these lines are the goods tracks from the hump yards and leading also to the locomotive yard and to the locomotive, carriage and wagon shops where, until recently, some 12,000 hands were employed. The foot overbridge in the middle distance connects the railway colony (left) with the signal shops and stores and also the workshops area. This photograph is apparently taken from Cabin "E," one of the 8 or 9 signal cabins controlling movements at this extensive railway centre and headquarters of a 7,000-mile system. As will be seen, the permanent way in this yard is well maintained, fully interlocked, and the whole is effectively flood lit.

# RAILWAY NEWS SECTION

## PERSONAL

We regret to record the death, on September 8, of Mr. Alexander McIsaac, Divisional Stores Superintendent (Scottish Area), L.N.E.R. Mr. McIsaac entered the service of the North British Railway as a junior clerk in the Stores Department in 1898, and, after obtaining wide and varied experience in all classes of stores work, including accounting, he was appointed Chief Clerk to the Stores Superintendent in 1913. This position he retained until 1923, when he became District Stores Superintendent, Southern Scottish Area, L.N.E.R. In 1926 he was appointed Divisional Stores Superintendent, Scottish Area of that system, the post he held until his sudden and untimely death while playing golf last Saturday. Mr. McIsaac was I.P.M. of the Trades House Lodge of Glasgow and an ex-Deacon of the Incorporation of Skinners.

*The late Mr. Alexander McIsaac,*
Divisional Stores Superintendent, (Scottish Area), L.N.E.R., 1926-1934

The Secretary of State for the Colonies has recently appointed Mr. C. B. Hughes, Senior Accountant, to be Chief Accountant, Gold Coast Government Railway and Takoradi Harbour.

We regret to record the recent death of Mr. Alexander Warren, Member of the Railway Commission in Rhodesia.

We regret to note the recent death, at the age of 86, of the Hon. W. A. Black, some time Canadian Minister of Railways and Canals.

With regret we record the death, on September 6, of Major A. E. Moore, for many years European Colonisation Manager, Canadian Pacific Railway, who retired in December, 1932.

Mr. T. Riley has joined the rolling stock sales organisation of the Brush Electrical Engineering Co. Ltd., and will operate from London. Mr. C. Lucas will in future devote most of his time to engineering sales.

The services of Mr. H. W. Hattersley, who was Sales Director, Karrier Motors Limited, have been retained as Sales Manager, Karrier Motors Successors Limited, the constituent of the Humber-Hillman-Commer group which has acquired Karrier Motors Limited.

Mr. D. C. Coleman has been appointed Vice-President of the Canadian Pacific Railway in succession to the late Mr. Grant Hall. Mr. W. M. Neal, General Manager Western Lines, is appointed Vice-President Western Lines, in succession to Mr. Coleman, and Mr. H. J. Humphrey, General Manager, Eastern Lines, is appointed Vice-President and General Manager Eastern Lines.

### Indian Railway Staff Changes

Mr. G. S. Bocquet, C.I.E., Traffic Manager, E.B.R., has been granted 28 months' leave preparatory to retirement, as from April 13.

Khan Bahadar A. A. Khan, on relief from his duties as Agent of the Mysore Railways, has been posted to the E.I.R. and granted eight months' leave as from June 18.

Mr. P. G. Shah has been posted as officiating Deputy Chief Accounts Officer, G.I.P.R., as from August 1.

Mr. C. W. M. Collins, Chief Engineer, B.B. & C.I.R., has been granted 12 months' leave as from September 25 next.

## Sir Josiah Stamp on Railway Traffics and Trade

Sir Josiah Stamp, Chairman and President of the London, Midland & Scottish Railway, speaking on September 10 at a luncheon of the Aberdeen Chamber of Commerce, said that the general outlook for British trade had slightly improved since in June he had drawn attention to the distinct slackening in the rate of recovery.

Improvement began to be definite in early July, but although welcome and distinct, it was not very great and the course ahead was by no means free from difficulty. Serious industrial trouble in any area could easily set it back to the June level. He regarded the traffic receipts on the L.M.S. as a very good general barometer, even making allowance for some changes in rates and fares. The first 34 weeks of 1933 had been only 78·6 per cent. of the same period of 1929, but for 1934 it had risen to 82·3 per cent. of 1929. The rise of barely 4 per cent., reducing the leeway to 18 per cent. still to be made good, was some indication of the measure of improvement. That the course was not steadily upward was indicated by the fact that the thirty-fifth week was 80·5 per cent. of 1929 and below the year's average, and only 2½ per cent. above 1933.

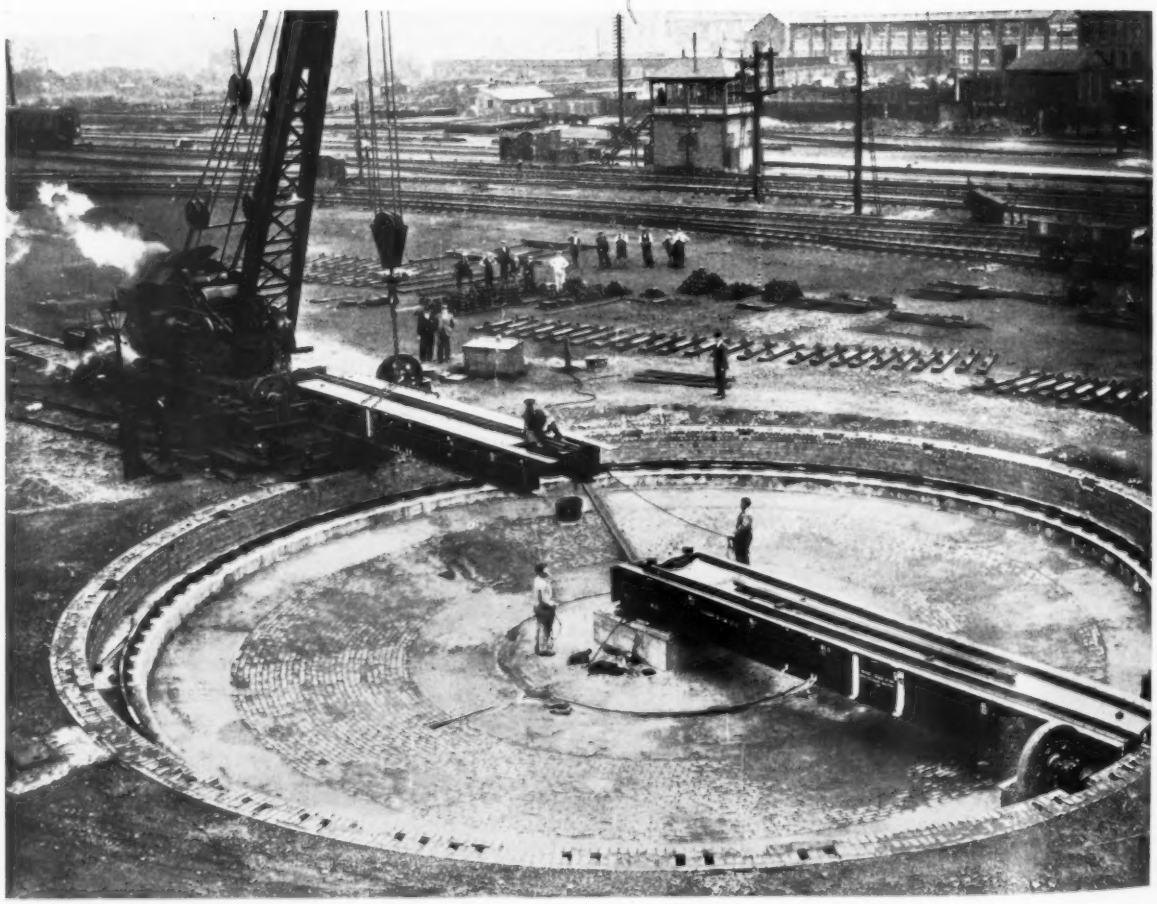
The recent wages settlement was thus a premature change judged on the trade recovery of the moment, and to be justified it required some faith in the continued rise of traffics and employment for 1935. Wage payments took so large a part of gross receipts that in the long run they could not be independent, especially if the future security of wages—so dependent upon the continued capacity of such a developing industry to attract the necessary capital—were considered. The workers would be most shortsighted if they lost account of this vital necessity for the future.

He was the first to acknowledge with gratitude the response of the workers in subordinating some of their ideas to the need for considerable changes in practice and the requirements of new ideas, which would be equally necessary in the future as in the past. If the settlement were taken by those concerned as an earnest of the goodwill existing he would not wish to make the parallel of receipts and expenditure too exact, and hoped that the confidence in anticipating the continuance of prosperity in 1935 would be justified.

Our revival was testing the limits of domestic trade, and if a general increase in export trade could not reinforce it, further extension would be obtained with increasing difficulty.

The Railway Service Christian Union.—The union will hold its first monthly meeting for the ensuing session on September 17 at the Society of Friends Meeting House, Euston Square, London, from 6 to 7.15 p.m. Non-members are invited. Further particulars of the union's activities may be obtained from the Honorary Secretary, 28, Merton Road, Seven Kings, Ilford.

*Right: Sir Murrough Wilson, Deputy Chairman of the L.N.E.R., unveiling a tablet at Pelton Fell near Chester-le-Street, County Durham, on Monday last to commemorate the centenary of completion of the Stanhope and Tyne Railway.* (*See article opposite*)



*Second section of main girder being installed in the new 70-ft. turntable at Derby, L.M.S.R.* (*See article opposite*)

# Centenary of North East Coast Railway

**Sir Murrough Wilson unveiled a tablet to commemorate the hundredth anniversary of the Stanhope and Tyne Railway, built without Parliamentary sanction, and operated partly by self-acting inclines**

On Monday last Sir Murrough J. Wilson, Deputy Chairman of the L.N.E.R., presided at a gathering to commemorate the centenary of completion of the Pontop and South Shields branch of the L.N.E.R. He gave the signal for the passage of a set of wagons up and down a cable incline and afterwards unveiled a tablet to mark the occasion. A photograph of this is reproduced on the opposite page.

This railway, which is 34 miles long, was constructed for the purposes of connecting the limestone quarries of Stanhope and the collieries of the Pontop district with the River Tyne. The line occupies an unusual place in railway history in that it was built without parliamentary sanction and without purchasing the land over which it ran. Its origin is to be found in a partnership called the Stanhope Railroad Company, established under deed of January 30, 1831, between various persons interested in mining rights in the parts of County Durham around Stanhope. In order to raise more capital a new unincorporated company was formed in the following year and called the Stanhope & Tyne Railroad Company.

Instead of applying to Parliament in the usual way, the intention of the promoters was to make voluntary arrangements with landlords for wayleaves, with a view to keeping secret the proposed purchase of certain mineral rights. This course was actually adopted and the company was saved Parliamentary costs. The annual wayleaves for the eastern part of the line, however, averaged about £300 a mile; in fact, so high were the demands of some small landowners that the Company's solicitor wrote "It is enough to make a horse sick to see parties, instead of blessing Providence for such a godsend, treating as if one was taking a road through a gentleman's pleasure ground."

The ecclesiastical authorities were among the principal landowners, and those who then ruled the diocese certainly gave proof that clergymen could be very businesslike when they applied their minds to the problems of finance, as witnessed by the rents they negotiated with this early railway. At the time that the negotiations were concluded, the promoters had no thought of carrying passengers, and no such rights were included in the original agreements.

The work in connection with the construction of the eastern portion of the railway presented no great engineering difficulties, but the western portion provided a very complex problem on account of the rugged nature of the ground and the acute gradients which had to be negotiated. The work was begun at Stanhope in July, 1832. On May 1, 1834, the first locomotive (built by Robert Stephenson & Company) was placed on the line at South Shields, and on May 15 the upper part of the line, a section of 15¼ miles from Stanhope to Annfield, was opened for traffic.

The lower, or eastern, section, which was begun in May, 1833, was opened on September 10, 1834, and this is the event just commemorated. Every form of motive power then available, namely, horses and locomotives, stationary engines, and self-acting inclines, was used over various sections. The opening of the first railway to South Shields was fitly celebrated. Church bells were rung in the town, royal salutes fired, and bands of music paraded the streets. After the shipment on board the *Sally* of the first consignment of coal which had been brought in 100 wagons from the Medomsley collieries, every man in the employ of the railway was entertained to a substantial dinner. The proprietors and guests, totalling 121, were given a dinner at the "Golden Lion" by the inhabitants of South Shields, the function lasting from 5 p.m. to 10 p.m. It is recorded that the whole proceedings passed off without the slightest accident or irregularity, and that "not a single case required the interference of the police."

Unfortunately, the high hopes of the promoters did not materialise, and only two dividends were declared, one for the year 1835, and the other for the year 1836, both being at the rate of 5 per cent. and paid out of borrowed money. In 1835, the railway began to carry passengers, first in coal wagons without payment, and then in open carriages attached to the coal trains. This, of course, involved the company in legal disputes, and claims for additional compensation were made by the landowners on the ground that the right of wayleave, previously granted, was for the conveyance of minerals only.

By the end of 1840 the company was bankrupt, and, as it was not incorporated, its members were jointly and severally liable for its debts. Eventually the proprietors agreed to forego their rights and to give the undertaking to a new company, called the Pontop & South Shields Railway Company, which was incorporated by Act of Parliament on May 23, 1842, and raised capital to pay the debts. This company's railway was taken over on January 1, 1847, by the York & Newcastle Railway, which in July, 1854, became the North Eastern Railway Company.

# New Large Turntables, L.M.S.R.

We announced on page 38 of our issue of July 6 last that, to enable larger and more powerful locomotives to be used and to speed-up station working, the L.M.S.R. proposed to instal locomotive turntables of increased diameter at six important traffic centres, namely, Stoke-on-Trent, Liverpool (Bank Hall depôt), Manchester (Victoria), Derby, Gloucester and Burton-on-Trent. Three of these turntables, at Liverpool, Manchester and Derby respectively, will be of 70 ft. diameter; at Stoke, 60 ft.; at Burton, 55 ft.; while at Gloucester two new turntables are being installed—one of 60 ft. at the passenger station, and one of 55 ft. at the locomotive depôt.

The 70 ft. turntables are the largest on the L.M.S.R. and permit the company's largest engines being turned. On the opposite page we reproduce a photograph showing the installation of the Derby table.

Of the new turntables, those at Stoke-on-Trent, Liverpool, Manchester, and Derby are being supplied by Cowans Sheldon & Co. Ltd., while those at Gloucester passenger station, Gloucester locomotive depôt, and Burton, are of the Mundt type and are being supplied by Ransomes & Rapier Limited. The latter firm has also recently supplied other turntables of the Mundt type to the L.M.S.R. as follow:—One 70 ft. for Fleetwood, one 60 ft. for Birmingham (Monument Lane), and five of various sizes for Kentish Town and Cricklewood.

## The Week's Road Accidents

The Secretary to the Ministry of Transport has issued the following return for the week ended September 1, of persons killed or injured in road accidents:—

| | Killed in accidents reported during the week | Reported during the week as having died as the result of accidents occurring in previous weeks | Injured in accidents reported during the week |
|---|---|---|---|
| | No. | No. | No. |
| England ... | 103 | 26 | 4,963 |
| Wales ... | 8 | — | 272 |
| Scotland ... | 4 | 1 | 460 |
| | 115 | 27 | 5,695 |

The total fatalities of the week, as the result of road accidents, were, therefore, 142, as compared with 159 for the previous week.

# The Buenos Ayres and Pacific Railway

## Commemoration of the jubilee of its foundation

We are indebted to the Secretary of the Buenos Ayres & Pacific Railway Co. Ltd. for a copy, which has recently become available in this country, of a pamphlet printed at the company's press in Argentina to commemorate the 50th anniversary of the founding of the company. It was founded in London on October 10, 1882, with a capital of £1,000,000 in preferred shares, £1,312,340 in debentures and £300,000 in deferred shares, for the purpose of acquiring from Mr. John E. Clark a portion of the contract he had made with the Argentine Government in 1874 for the construction of two railways: (1) one between Buenos Aires and San Juan via Villa Mercedes, San Luis and Mendoza, and the other from Mendoza or San Juan, in the direction of San Felipe de los Andes (Chile) up to the limit of the Argentine Republic. The contract was originally for a metre gauge line, but was altered to the present standard broad gauge of 5 ft. 6 in. in 1877, the modified contract being dated 1878. Construction commenced on July 9, 1882. The portion acquired by the Pacific Railway, at its foundation, was between Mercedes in Buenos Aires Province (some 70 miles west of the Federal capital) and Villa Mercedes in the Province of San Luis. Construction of the railway from the two extremities, Mercedes and Villa Mercedes, instead of from Buenos Aires, implied that the materials had to be carried over the Western Railway to Mercedes, or from Rosario (via the Andine Railway) to Villa Mercedes. This caused great delay, as the Western could not cope with its own traffic for lack of rolling stock, and when the line was commenced at Villa Mercedes the Andine—regarding the Pacific as a competitor—refused to carry the materials, but when Mr. Clark hired bullock carts for the transport to railhead, the Andine Company, realising that resistance was useless, allowed the materials to go over its own line. Had construction commenced at Buenos Aires, these difficulties would have been avoided, as also the great expense involved eventually in obtaining access to the Federal capital.

### Extension to Buenos Aires

On September 14, 1886, the company was authorised by its shareholders to contract for a concession to extend the line from Mercedes to Buenos Aires, and the transfer of this concession was ratified by the Argentine Government on January 10, 1887. The first portion of the Pacific Railway, between Mercedes and Chacabuco (60 miles) was opened to public service on March 1, 1885; the second portion, from Chacabuco to Diego de Alvear (then called Orellanos), 97 miles, on February 15, 1886; and the remainder from Diego de Alvear to Villa Mercedes, 201 miles, on October 8, 1886. The first passenger trains made the journey from Mercedes to Villa Mercedes, a distance of 359 miles, on October 15, 1886, and was only about 165 ft. long and had neither restaurant nor sleeping cars; to-day, trains of 1,300 ft. in length are not uncommon. The section eastwards from Mercedes to Palermo, in the city of Buenos Aires, was opened to service on March 20, 1888, the first passenger train running on March 25. At this time the Pacific trains utilised the tracks of the Central Argentine Railway (then called the Northern Railway) inwards from Palermo in order to obtain access to the heart of the city of Buenos Aires, the central station of that company being then situated near the Government House. It was not until July 7, 1912, that the Pacific was able to run its trains into the present terminal at Retiro, close to the docks and alongside the port works.

### Financial Position

Owing to the financial situation and the difficulty in raising capital, progress in extensions was slow until the year 1900, which saw the commencement of a rapid development of the railway's activities. During the first decade from its foundation the company had a chequered existence, and at one time was on the verge of bankruptcy. In 1889 disastrous floods caused a stoppage of traffic on the main line between Castellanos and Mackenna from the beginning of March until the end of the year, and also resulted in heavy expenditure for raising and repairing the line. Many other difficulties beset the company, and in 1889 there was a loss on working of £33,000, while in the following year receipts fell short of expenditure by nearly £100,000. Trouble then arose in 1891 with reference to the payment of the Argentine Government guarantee of 7 per cent. for 20 years on £3,000,000 of capital under the contract of 1877. This was eventually settled in 1896 by the company receiving from the Argentine Government a provisional bond for £377,000 bearing 4 per cent. interest and ½ per cent. amortisation, in payment of past and future guarantees, and in the following year rescission bonds were received in exchange. These accumulated troubles had meanwhile led to the appointment of a receiver of the company's affairs, but as the result of an agreement with the debenture-holders the receivership was discharged and the company was set free once more to work out the prosperity which lay before it.

Plans for the extension of the railway into the centre of Buenos Aires were authorised in 1901 but subsequently modified in the interests of the City and also of the proposed extension of the Cordoba Central Railway into the capital. The present Retiro station and goods yard are built on land reclaimed from the River Plate and occupy 110 acres, the high level independent access of 5 miles from Palermo having been the most important engineering work carried out by the railway. It has two viaducts of brickwork containing 116 arches of 42·3 ft. span each and 19 steel bridges, the longest being 178·8 ft. The first section of the work was opened to service on April 14, 1909, and the second section—into Retiro—on July 7, 1912.

### Improvements

The company took over on September 1, 1900 the working of the railway of 141 miles which runs north from Rufino on the Pacific main line to Villa Maria. In the year 1901/02 the work of replacing the old 50 lb. rails with 100 lb. rails from Junin onwards was begun, the work on the whole section of 270 miles from Junin to Villa Mercedes being completed in 1907. This enabled the then most powerful engines in South America (132½ tons weight, haulage capacity 2,700 tons) to be utilised. By this time local passenger traffic had increased to such an extent that it was found necessary to double the track on the local section, and the first portion, from Devoto to Hurlingham, was opened on December 1, 1902. From Palermo the line traverses a densely populated area to the confines of the city boundaries 10 miles from Retiro within which are several residential suburbs. The local section, properly speaking, now extends up to José C. Paz, 25 miles from Retiro, with 12 intermediate stations. In the working year 1903/4, and for the first time in the history of the Pacific Railway, over 1,000,000 passengers were carried. In 1909 the number of passengers was over 7,000,000 and in 1911, for the first time, the receipts from passenger traffic alone exceeded £1,000,000.

### Worked Lines

On July 1, 1904, the Pacific took over control of the Bahia Blanca & North Western Railway, with 241 miles of line in operation and docks at Galvan Port. When this system was tranferred to the Southern Railway on November 1, 1924, a stretch of 289 miles of main line, and numerous branches totalling 312 miles, which the Pacific had constructed in the meantime, were also handed over, together with a branch of 31 miles which had been purchased from the Southern Railway. On July 1, 1907, the Pacific Railway took over the administration of the Argentine Great Western Railway (a line purchased by that company from the National Government in 1887). This system extended for over 300 miles from Villa Mercedes to the rich wine districts of Mendoza and San Juan, with a branch to San Rafael. Owing to the steep gradients on the Argentine

Great Western main line from Villa Mercedes to La Paz, via San Luis, an alternative route of 166 miles, with easier slopes, from Justo Daract to La Paz, via Beazley, was constructed in 1908-09, for the account of the Pacific Railway. The Argentine Transandine Railway which had been worked by the Argentine Great Western, was taken over with the latter railway and operated as part of the Pacific system. On May 13, 1923, it was transferred to the Argentine and Chilean Transandine Railway Companies. In November, 1909, the Pacific and Central Argentine Railways acquired from the National Government the line known as the Andine Railway. The portion taken over by the former company was that running from Villa Mercedes to Rio Cuarto, the section from Villa Mercedes to Villa Dolores being allocated to the Argentine Great Western system. The respective lengths assimilated to the three systems were:—Central Argentine 84 miles, Pacific 73 miles, and Argentine Great Western 139 miles.

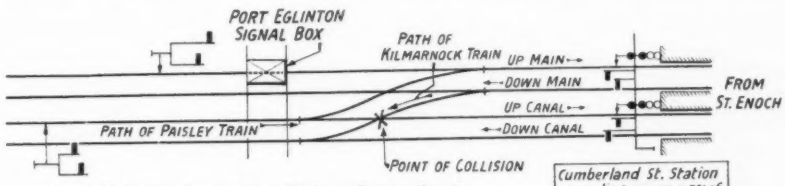
### Later Developments

During the intervening years to 1912 the progress of the company was continuous, but in January and February, 1912, a prolonged strike of drivers and firemen seriously affected the business of the company. This strike of 52 days was one of the most serious in railway history. The second half of 1913 saw the commencement of a trade depression which was aggravated in the following year by the outbreak of the European war. Serious and prolonged labour troubles also occurred in 1917-18. Since the war the only new extension constructed has been the branch line of 112 miles from Laboulaye to Sampacho, which was opened to goods traffic in February, 1929. There have, however, been other developments, amongst which may be mentioned the completion in 1926 of the main line ballasting programme which had been begun in 1906, and the acquisition in 1920, in conjunction with the Southern and Western Railways, of the Comodoro Rivadavia fuel oil property.

Passenger trains run daily between Buenos Aires and Alberdi (209 miles), Rufino (262 miles), Villa Mercedes (429 miles), Mendoza (661 miles) and San Juan (757 miles), while passenger or mixed trains, connecting at junction stations with the main line trains, serve the various outlying terminals in the country districts. On all long distance trains, restaurant and sleeping cars are provided. The local section in Buenos Aires is served by 28 trains in each direction for stations up to Caseros, and an additional 35 up to José C. Paz and a further 13 up to Pilar. In the best year in the history of the company, viz. 1928-29, passenger traffic brought in over £1,400,000, representing one-sixth of the total receipts. Wine is the most important single item of traffic on the Pacific Railway.

## Fatal Collision in Glasgow

The accompanying sketch shows the position at which, on Thursday evening, September 6, a passenger train from St. Enoch to Kilmarnock via Dalry was met, almost head on, by a passenger train from Paisley to St. Enoch as the former was crossing, at Port Eglinton Junction, from the up main to the up Canal line and the Paisley train was continuing its journey on the down Canal line. The accident occurred about 5.40 p.m., and so both trains were well filled and consequently casualties were heavy; five passengers were killed or have since died, and there is only one survivor—the driver of the Paisley train—among the four enginemen.


PORT EGLINTON SIGNAL BOX
PATH OF KILMARNOCK TRAIN
UP MAIN
DOWN MAIN
UP CANAL
DOWN CANAL
FROM ST. ENOCH
PATH OF PAISLEY TRAIN
POINT OF COLLISION
Cumberland St. Station see diagram on p.701 of THE RAILWAY GAZETTE of May 26, 1933

*Port Eglinton junction collision, September 6*
*Position of points and signals concerned*

The Ministry of Transport inquiry was opened on Tuesday by Lt.-Col. Mount, who reminded the members of the public present that it was not a court for the determination of legal responsibility, but to ascertain the cause, in the interests of public safety, to take such steps as would prevent a recurrence. Mr. James Wilson, Solicitor for Scotland, expressed the regret of the L.M.S. Railway Company at the accident and its sympathy with the injured and the relatives of those who had been killed. Among the officers of the Scottish Area, L.M.S.R., present were Mr. W. Crozier (Operating Manager), Mr. J. N. Phillips (Assistant Operating Manager), and Mr. J. G. Barr (Divisional Supt. of Motive Power).

In accordance with an intimation, given by Colonel Mount at the opening of the proceedings, that any evidence that might prejudice any of the men concerned would be given in private, no facts were publicly revealed as to the cause of the accident, and the inquiry stands adjourned until the driver of the Paisley train has sufficiently recovered from his injuries to give evidence.

## Inaccurate Reports Regarding Irish Train Wrecking

(*From our Dublin correspondent*)

Reports in certain of the English press of alleged attempts at train wrecking in the South of Ireland need an effective contradiction and explanation of the facts. The non-publication of the Dublin papers in consequence of a strike has prevented the facts being published. In one instance press reports stated definitely that an attempt had been made to wreck the train connecting with the boat from England, via Rosslare, and particulars were given of the number of English passengers whose lives were in jeopardy. In reality no life was endangered, and the ordinary precautions taken by the railway company when the railway telegraph communication between stations is out of order provide sufficient safeguard against the possibility of such danger to train passengers.

The trouble arose through the sales of cattle which were seized by the Government authorities from the farmers who refused to pay their annuities, and, with a view to preventing purchasers attending the sale and in order to delay the trains and cause general inconvenience, the telegraph and E.T.S. block wires on one or two single lines were cut. Consequently a train could proceed on its journey over a single line without the E.T. staff until pilot working is arranged. To establish pilot working it was necessary for the pilotman to walk the line between the stations affected, when any interference with the line would be discovered and trains would not be allowed to proceed from the stations at either end of the section until the line was in order.

That the English holidaymakers and tourists have not been kept back by the misleading reports is shown by the numbers who have travelled, and continue to travel, to the Irish Free State, but it is necessary to state emphatically that there has been no attempt at train wrecking, and that the conditions in Ireland are as peaceful as in any other country.

COLLISION ON ROUMANIAN STATE RAILWAYS.—A passenger train and a goods train came into collision at Jimbolia, near the Jugoslavian frontier, on September 10. It is reported that one passenger was killed and a number injured.

# The Future of Rail Transport*

One hundred years ago the "calamity of railways" fell on the existing means of transport, and the effect of railway competition on the canal companies, the stage coaches, and the road carriers of that time is well known. To-day it is the railways whose established position is assailed. In view of the road, coastwise shipping, and air developments in transport, are the railways to be displaced from their position as the chief mode of transport?

British railway revenue has fallen by no less than 26 per cent. since 1923, and the decrease has been more severe in the case of passenger traffic and merchandise than in that of coal and minerals, though the revenue from the carriage of live stock also shows a big decline. Compared with pre-war years, expenditure shows a big increase, due in part to the increase in cost of materials, but chiefly due to the rise in wages. Since 1924 the expenditure has been considerably reduced, due to the lower cost of materials, numerous operating economies, and diminished traffic. The net revenue of the four groups was £45,600,000 in 1923; £45,000,000 in 1929; £26,400,000 in 1932; and £28,800,000 in 1933. In 1923 the net revenue earned by the group companies represented 4·41 per cent. on all capital; in 1929, 4·17 per cent.; and in 1933, 2·68 per cent.

The causes of this decline are industrial depression, contraction of international trade, and road, coastwise, and air transport. It is probable that a relatively small part of the passenger decrease is due to economic depression, and that the bulk of it is due to road competition, including the private motor car. It would seem fair to estimate that in 1933 at least 15 or 16 per cent. of the total decline of 28 per cent. since 1923 is due to road competition. Taking passenger and merchandise traffic together, the loss of net revenue due to road competition between 1923 and 1930 may be estimated at not less than £16,000,000.

From 551,000 in 1920, the number of motor vehicles in use in Great Britain rose to 2,250,000 in 1933. Of the 1933 total, 379,600 were goods vehicles, 85,352 hackney carriages, and 1,195,882 private motor cars. Approximately 5,418,000,000 passenger journeys were made in 1933, or six times the number by rail, but the receipts were only £57,900,000, or 2·57d. per passenger. The striking growth of road transport has been due to its mobility, flexibility, and convenience, and to a reduction in the price of fuel. To commercial travellers, salesmen, and the like, the motor car is a most valuable help, and has robbed the railways of much traffic which they are unlikely to regain. On the other hand, a big proportion of road traffic is new traffic which would not have been developed without the motor car.

On the goods side, road transport has become intensified within recent years, partly because of its convenience, but chiefly because of lower charges. Road hauliers have been able to quote low rates for the higher grades of traffic without any statutory obligation to carry commodities in the lower range, *e.g.*, ores, coal, and road metal. Knowing both the standard and exceptional railway rates, they can undercut the railways, but the Road and Rail Traffic Act of 1933 will tend to restrict competition, although there can be no immediate reduction. Reliability and speed, especially over long distances, tend to give the railway advantages, and noteworthy attempts are being made to recover lost traffic by such means as summer tickets, express braked goods trains, use of containers, and collection and delivery services. In the last six years the British railways have also made free use of the powers conferred upon them by the Railway (Road Transport) Acts of 1928, by which they are permitted to own and operate road services or to invest in established concerns.

### The Ideal

An ideal distribution of traffic would provide for an economically sound division of function between road, rail, and other forms of transport, and would take into account, not only the price to the consumer and the cost to the operator, but also the ultimate real cost to the community. This could only be brought about if it were possible to ensure that each piece of transport service was charged for at a rate sufficient to cover its true cost of production. The difficulties of determining such costs are great. The time factor in relation to peak loads has been emphasised elsewhere, but it is also necessary to consider the load factor, which is of great importance. An example of the influence of the time factor is the reduction of fares on certain suburban routes outside the peak hours, and the load factor is also considered in the minimum consignment rates.

Costs to a railway are at a minimum when its capacity is fully employed, and it is conceivable that a system of charging based on the load factor will be more used in the future, but it will be difficult to evolve a universal method. Nor can it be felt that the solution lies along the lines laid down by the late Sir William Acworth (although agreeing with his principle) that the Government should encourage that means of communication which in each case is on the whole the most economical to the community at large. It is economically unsound to permit individual users to employ a means which, though the total cost is greater, is cheaper to the Government because it can impose on the taxpayer or ratepayer a portion of the cost. It is also unlikely that the problem will be solved by an attempt to divide traffic rationally between rail and road, in which the railways would be considered as sections which could or could not be worked profitably under a revised scale of charges dictated by the exigencies of the situation. The unprofitable lines would be closed down and their capital cost written off. The adjustment required to road transport would be equally drastic, and both rail and road transport are necessary in all areas. A new phase in the competition between rail and road transport is that of agreed charges, but a large extension of this system would result in still greater competition with road hauliers, much of which would be wasteful to the community.

### The Solution

How can the real needs of the country in the way of transport be best and most economically met? The solution seems to be that the railways must become transport companies, undertaking a given piece of transport by that means or combination of means which appears to them to be the most economic, and, at the same time, most suited to meet the real demand. This would mean the absorption of road passenger and goods services for public use, and is a solution which has been adopted in the Irish Free State. A somewhat similar solution has been recommended to the Government of Northern Ireland by Sir Felix Pole. In this way all systems of land, and possibly air, transport would come under unified management, and it would obviously be to the benefit of the management to effect the transport by the most economic method. A considerable degree of monopoly is involved, but the interests of the community could be safeguarded, and the monopolistic companies kept to a high degree of efficiency.

[We comment editorially on this address on page 417.]

* Precis of an address by Prof. H. M. Hallsworth, C.B.E., before the Economic Science and Statistics Section of the British Association, at Aberdeen.

---

**Historic Engines in Brussels Exhibition.**—The *Stephenson*, *Elephant*, and *Fleche*, three of the earliest locomotives to run in Belgium, are being cleaned up in the railway works at Malines, to play their part in the Universal Exhibition which is to take place in Brussels in 1935. They will figure in a historical review of the railways of Belgium, to which the entire central hall is to be devoted. Near them will be examples of the latest locomotives and railcars now operating in Belgium. The hall will contain a model railway station, with its post-office and buffets, and a miniature train will convey visitors round the exhibition grounds. Under the energetic guidance of King Leopold II, Belgium was among the earliest of the Continental countries to adopt the railway as a means of transport. As the names of their oldest locomotives show, they relied on British railway experience and for many years followed British railway practice.

# NOTES AND NEWS

**Parkeston Quay Extension, L.N.E.R.**—The reinforced-concrete extension at the western end of Parkeston Quay, Harwich, which is now completed, is to be opened officially on October 1 by Admiral of the Fleet Sir Reginald Yorke Tyrwhitt, Bart., who was in command of the Harwich force during the war. The new works have been in progress since 1931. They comprise an extension 1,120 ft. long and 146 ft. wide upon which has been built a two-storey 900-ft. transit shed and passenger station.

**Latvian State Railway Results.**—During 1933 the receipts of the Latvian State Railways fell by 16 per cent. to 29,692,000 lats, but as the working expenditure was reduced by 18·7 per cent. to 31,009,000 lats, the operating ratio came down from 107·2 to 104·4. The length of line open increased by 7 miles to 1,657 miles, of which 1,220 miles were laid to 5-ft. gauge. Construction of 412 km. of new lines is being proceeded with as funds permit. There are 15 lats to the £ at the present rate of exchange.

**South African Railways to spend £1,400,000 on Rolling Stock.**—The South African Government, states a Reuters message from Pretoria, has decided to spend £1,434,832 on increasing the rolling stock on the Union Railways during the present financial year. This has been found necessary owing to the rapid improvement of economic conditions in the country. The sum will be spent as follows:—£443,500 on the purchase of new locomotives; £267,415 on new coaches; £666,764 on new goods wagons; and £57,153 on additions and improvements to existing stock.

*Mr. Cecil M. Furst completing* 2,339 *miles of railway travel in one week on a holiday season ticket* (*see editorial note on page* 418)

**Fuel Savings on U.S.A. Railways.**—Increased efficiency in the use of fuel in U.S.A. railway freight service has resulted in a total saving of 181,975,686 tons of coal, valued at $440,113,000, from 1923-1933 inclusive. In 1923 2 lb. of coal per 1,000 gross ton-miles were saved as compared with 1922, which was equivalent to 1,123,970 tons of coal. The average cost of the railway coal in 1923 was $3·45 a ton, so that the money saved amounted to $3,878,000.

**L.M.S. Excursions for Blackpool Illuminations.**—Over 1,350 long distance excursions have been arranged by the L.M.S.R. for the Blackpool autumn illuminations, which begin to-morrow, September 15, and continue until October 22. This total exceeds that of last year and it is anticipated that over 600,000 passengers will be brought from various parts of the country to see the illuminations. Trains have been scheduled from districts as far distant as Glasgow, South Wales, Tyneside, and London. On the busiest Saturday the L.M.S. has made arrangements to deal with over 100 extra trains.

**The Croydon Canal.**—The last portion of the old canal which formerly ran between London and Croydon (the predecessor of the London & Croydon Railway, the route of which in parts, follows the site of the old waterway), is not to be done away with, as was feared might be necessary, states the *Southern Railway Magazine*. The remaining section, which adjoins Betts Park, near Anerley station, and is a pretty piece of water, with overhanging trees, is said to cause a nuisance through stagnation, but instead of having it filled in, the Penge Council has decided to give it a thorough cleaning and provide it with concrete walls and a concrete bed.

**North-Western Polytechnic Transport Courses.**—The prospectus and syllabus for the 1934-35 session, issued by the North-Western Polytechnic, Prince of Wales Road, N.W.5, contain full details of the courses on transport and cognate subjects which are to be delivered during the period in question, and which are designed to meet the requirements of those who are engaged in or interested in, transport operation, and who desire to supplement their practical knowledge by a theoretical study of the subject. Intending students should enrol during the ensuing week. The Secretary is Mr. H. O. Richards, F.I.S.A., F.R.Econ.S., and the lecturers for the session include: Mr. E. T. Milburn, Brunel Medal, Rail Transport; Mr. H. Scott Hall, M.I.A.E., Road Transport and Mr. R. R. Plummer, A.M.Inst.T., Industrial Transport Management.

**Dirty Locomotives.**—A correspondent writes *apropos* of the letter to the Editor on page 266 of THE RAILWAY GAZETTE of August 17 on the subject of dirty locomotives that ex-Great Northern Atlantic No. 4442 which was transferred to Sheffield (G.C. section) some time ago has now been returned to King's Cross, "but alas" he says, "it is not the 4442 of old, for her usual spotless green livery is now nearly black. However, it is to be hoped that the shed staff at King's Cross will soon remedy this."

**Battersea, Longhedge, and Stewarts Lane, Southern Railway.**—As from September 1, the following names apply to the various depots and goods yards belonging to the Southern Railway in the neighbourhood of Stewarts Lane, namely, Stewarts Lane (Loco. Depot), Stewarts Lane (Goods Yard), and Stewarts Lane (Stores Dept.). The use of the old names such as Battersea Loco. and Longhedge Stores Depot has been discontinued. The riverside Goods Dept. at Battersea is now known as Battersea Wharf.

**The Railway Queen.**—An audience estimated to exceed 70,000 persons, mainly railwaymen and their families, filled Belle Vue, Manchester, on Saturday night last for the railway employees' carnival and the crowning of the Railway Queen of Great Britain. The new queen is Miss Ruby Evelyn Dovey, of Acton, London, the daughter of a G.W.R. engine driver. The crowning ceremony was performed by Mr. G. L. Darbyshire, Chief Officer for Labour and Establishment, L.M.S.R., representing Sir Josiah Stamp, President of the L.M.S.R.

**Sir Josiah Stamp on Economic Planning of Industry.**—In the course of the discussion upon the above subject at the British Association meeting at Aberdeen, Sir Josiah Stamp suggested the likelihood of greater State intervention in industry in the future. "There is a large change going on," he said. "There is a feeling that to have every man directing his business entirely within the limits of his own estimate of the market without let or hindrance from anyone else will result in mistakes and maladjustments which ought to be avoided. I feel that there exists a problem which is more than should be left to individual trades to work out. You have only to go into the cotton industry to see the extraordinary difficulties in which it is placed by complete reliance on individualism, and how enormously difficult it is to get these hard-headed men to realise that they will not succeed unless they recognise that they are part of a great whole. In

view of what is happening in the coal and shipping trades, it is impossible for us to say that the community can go on along the lines of the large-scale enterprises as understood in the Victorian era. We have got to realise that the State is going to be invoked continually."

**Lourenço Marques Railway Proposals Unacceptable.**—It now transpires that the railway proposals—referred to in our news columns last week—were responsible for the break-down in the negotiations for the renewal of the Mozambique Treaty at Lourenço Marques. Mr. Pirow, Union of South Africa Minister of Railways, and Mr. Duncan, the Minister of Mines, are accordingly returning to Cape Town.

**Electrical Equipment of Buildings.**—The Institution of Electrical Engineers has published the tenth edition of Regulations for the Electrical Equipment of Buildings, formerly known as the I.E.E. Wiring Rules. Details are given of the necessary precautions against fire and shock and the main requirements for ensuring satisfactory results in the electrical equipment of buildings. The price, in cloth, is 1s. 6d., and in paper covers, 1s.

**Canadian Railwaymen's Glimpse of London.**—A party of about 140 Canadian railwaymen paid a flying visit to London last week. The tour was arranged by the President of the C.P.R. to enable all grades of his staff to spend 13 days in crossing the Atlantic and in seeing a little of England. They had just one clear day in which to travel from Southampton to London and see the sights there. They returned as they came, by the C.P.R. liner *Empress of Britain*.

**Trains from Fenchurch Street.**—On the next two Sundays, September 16 and 23, the passenger train service to and from Fenchurch Street, Stepney, Burdett Road, and Bow Road will be suspended on account of engineering operations. The service which usually runs between Fenchurch Street and North Woolwich will be operated between Stratford Low Level and North Woolwich with connecting trains to and from Liverpool Street. Similar arrangements applied on Sunday last.

**Swiss Storm Damage.**—A local train was derailed and the railway between Lucerne and the Gotthard tunnel cut in three places by avalanches of mud which swept down the mountainside as a result of the torrential rains and storms which deluged Central Switzerland on Sunday night. Some persons in the local train, which was travelling between Lucerne and Arth-Goldau, were slightly injured. The engine, tender, and leading carriage left the rails when the train ran into the debris left by the avalanche. The lines on which communication was interrupted were those between Lucerne and Arth-Goldau and between Zug and Arth-Goldau. Traffic between Switzerland and Italy via the Gotthard tunnel was not interrupted, as passengers were conveyed by steamer across the Lake of Lucerne to Brunnen, whence they continued their journey by rail. On the Rigi mountain railway between Arth-Goldau and Rigi-Kulm, just above Klosterli, a train was caught by a fall of stones and brought to a standstill. The guard had his leg broken in the accident and the passengers were compelled to spend the night in the train. Three other trains on the railway were also held up.

**New Cheshire Lines Halt.**—Chassen Bridge halt, on the Cheshire Lines Railway between Manchester and Liverpool, was opened for passenger and parcels traffic on Monday last, September 10. The halt, which is almost equidistant between Flixton and Urmston, is under the supervision of the Urmston stationmaster. It serves an area which is rapidly developing, and in the near future 2,000 new houses will have been built in the immediate neighbourhood.

**New Inland Air Route for Scotland.**—A new air passenger service between Aberdeen and Glasgow was inaugurated by Aberdeen Airways Limited on September 10. The machines in use are six-seat twin-engined monoplanes, scheduled to make the journey between the Dyce (Aberdeen) and Renfrew (Glasgow) aerodromes in 75 minutes. Two of these aircraft are at present working the route, which will be flown over twice daily. Connections with Orkney and Shetland are foreshadowed subject to an agreement with Highland Airways Limited.

**Standard Relays for Railway Signalling.**—The fifth and sixth specifications in the series of British Standard Specifications (Nos. 557 and 561, 1934) for railway signalling relays have recently been issued, and deal respectively with alternating current line relays of the single-element 2-position and the 2-element 3-position, induction types. In general form these new specifications follow the lines of the previous members of the series, but the performance characteristics are in each case peculiar to the particular type of relay. Copies may be obtained from the British Standards Institution, 28, Victoria Street, London, S.W.1, price 2s. 2d. each, post free.

**Railway Traffic in Roumania.**—In our issue of June 22 last we recorded the total receipts and expenditure of the Roumanian State Railways for 1933. To this information supplementary figures are now available in a report on the economic and financial conditions of the country issued by the Department of Overseas Trade. The decline in the number of passengers carried appears to have steadied somewhat, 24,217,000 (provisional figure) in 1933, comparing with 24,416,000 in 1932, but the overall reduction since 1929, when the figure was 38,786,000, amounts to 24 per cent. This is attributed partly to omnibus competition in districts where the train service is slow, and the use of railcars on branch line services is receiving serious consideration. Goods traffic however, has only fallen off by 4 per cent. since 1929, largely owing to increasing transports of oil.

**London Transport Railway Wages.**—Representatives of the three railway trade unions met the London Passenger Transport Board on September 11 to discuss the claim of the unions for the restoration of the percentage wages cut, imposed in 1932, on the same basis as on the main line railways. The general position was gone into in great detail, the conference lasting two and a-half hours. No final decision was reached, and it is understood that no definite offer was made, but the negotiations are to be continued at a further conference after the union representatives have reported to their respective executives.

**Industrial Transport Association Examinations.**—Examinations for associateships of this association will be held in London on May 3 and May 5, 1935. Compulsory subjects in the Part One examination, candidates for which must have attained the age of 18, are the principles of accounts, commerce, and the elements of industrial transport management, with optional papers in modern languages, commercial geography and mercantile and shipping law. The final examination (minimum age of entry 20) comprises compulsory papers on economics and transport law and management. Optional subjects are transport operation and economics, industrial organisation and business statistics, marine insurance, law and practice of shipping and Continental traffic problems. Intending candidates should apply to the Honorary General Secretary of the association, Dudley House, Southampton Street, Strand, W.C.2.

**Prizes for Best Kept Stations.**—The awards have now been made to the successful entrants in the 1934 competition for best kept stations in the Southern Area of the L.N.E.R. Elsenham and Darsham stations have been awarded special class A prizes, and Aldeburgh and Trimley special Class B prizes. First prize winners are Bealings, Chadwell Heath, Highams Park, Clare, Wrabness, Wretham and Hockham, Chettisham, and Bush Hill Park. In addition, 10 stations receive second class awards, 20 stations third class awards, and 26 stations fourth class awards. Points are gained for the general condition of passenger and goods stations, smartness of staff, neatness of advertisements and the cultivation of flowers and shrubs. Awards have also been made in the Southern Scottish Area. Bellingham (North Tyne), Lennoxtown, and Newport (East), have been awarded special class A prizes and Burgh-by-Sands, Grahamston, and St. Monans special class B prizes. In addition, 21 stations receive first class awards, 22 stations second class awards, 41 stations

third class awards, and 56 stations fourth class awards. In the Northern Scottish Area Torphins station receives a special class B award, Inverurie a second class, and Dandaleith fourth class.

**Road Transport Wages.**—The Ministry of Transport has issued a statement explaining the effect of the recommendations of the Sub-Committee which have been adopted by the National Joint Conciliation Board for the Road Motor Transport Industry (Goods). After October 1, all persons who carry goods for payment will have to hold A or B carriers' licences under the Road and Rail Traffic Act, 1933. It will be a condition of these licences that the provisions of the Road Traffic Act, 1930, as amended and applied by the Act of 1933, are observed. These provisions are in effect that the wages and conditions of employment shall be not less favourable than those commonly recognised by employers and trade unions, or, in the absence of such recognised rates and conditions those observed by good employers in the neighbourhood. Any organisation of persons engaged in the road transport industry will be able to represent to the licensing authorities that the wages or conditions of employment in the case of any particular licence holder are not satisfactory; and if the matter is not settled by agreement it will be referred by the Minister of Labour to the Industrial Court for settlement.

**French Excursion to see the "534" Launched.**—A special excursion will be run from Paris for the launching of the Cunard-White Star liner "534" on September 26. The party will leave Paris on September 24, spend the next day in London, and travel up to Glasgow at night. A motor coach ride to Loch Lomond in the morning will precede attendance at the launch in the afternoon. The excursion is due to reach Paris again at 6 p.m. on September 27. An inclusive charge of fr. 625 is being made for the trip.

## British and Irish Railway Traffic Returns

| GREAT BRITAIN | Totals for 36th Week | | | Totals to Date | | |
|---|---|---|---|---|---|---|
| | 1934 | 1933 | Inc. or Dec. | 1934 | 1933 | Inc. or Dec. |
| | £ | £ | £ | £ | £ | £ |
| L.M.S.R. (6,940¾ mls.) | | | | | | |
| Passenger-train traffic... | 536,000 | 535,000 | + 1,000 | 17,597,000 | 17,333,000 | + 264,000 |
| Merchandise, &c. ... | 459,000 | 432,000 | + 27,000 | 15,813,000 | 14,600,000 | +1,213,000 |
| Coal and coke ... | 225,000 | 206,000 | + 19,000 | 8,037,000 | 7,671,000 | + 366,000 |
| Goods-train traffic ... | 684,000 | 638,000 | + 46,000 | 23,850,000 | 22,271,000 | +1,579,000 |
| Total receipts ... ... | 1,220,000 | 1,173,000 | + 47,000 | 41,447,000 | 39,604,000 | +1,843,000 |
| L.N.E.R. (6,339 mls.) | | | | | | |
| Passenger-train traffic... | 357,000 | 351,000 | + 6,000 | 11,336,000 | 11,160,000 | + 176,000 |
| Merchandise, &c. ... | 296,000 | 292,000 | + 4,000 | 10,953,000 | 10,079,000 | + 874,000 |
| Coal and coke ... | 215,000 | 197,000 | + 18,000 | 8,060,000 | 7,355,000 | + 705,000 |
| Goods-train traffic ... | 511,000 | 489,000 | + 22,000 | 19,013,000 | 17,434,000 | +1,579,000 |
| Total receipts ... ... | 868,000 | 840,000 | + 28,000 | 30,349,000 | 28,594,000 | +1,755,000 |
| G.W.R. (3,750 mls.) | | | | | | |
| Passenger train traffic... | 245,000 | 242,000 | + 3,000 | 7,448,000 | 7,473,000 | – 25,000 |
| Merchandise, &c. ... | 184,000 | 179,000 | + 5,000 | 6,373,000 | 5,917,000 | + 456,000 |
| Coal and coke ... | 104,000 | 92,000 | + 12,000 | 3,524,000 | 3,466,000 | + 58,000 |
| Goods-train traffic ... | 288,000 | 271,000 | + 17,000 | 9,897,000 | 9,383,000 | + 514,000 |
| Total receipts ... ... | 533,000 | 513,000 | + 20,000 | 17,345,000 | 16,856,000 | + 489,000 |
| S.R. (2,176 mls.) | | | | | | |
| Passenger-train traffic... | 355,000 | 350,000 | + 5,000 | 10,781,000 | 10,635,000 | + 146,000 |
| Merchandise, &c. ... | 63,000 | 60,000 | + 3,000 | 2,261,500 | 2,159,500 | + 102,000 |
| Coal and coke ... | 24,000 | 26,000 | – 2,000 | 1,105,500 | 1,045,500 | + 60,000 |
| Goods-train traffic ... | 87,000 | 86,000 | + 1,000 | 3,367,000 | 3,205,000 | + 162,000 |
| Total receipts ... ... | 442,000 | 436,000 | + 6,000 | 14,148,000 | 13,840,000 | + 308,000 |
| Liverpool Overhead ... (6½ mls.) | 1,189 | 1,293 | – 104 | 41,630 | 41,137 | + 493 |
| Mersey (4½ mls.) ... | 4,013 | 4,202 | – 189 | 146,416 | 142,479 | + 3,937 |
| *London Passenger Transport Board ... | 529,900 | 523,600 | + 6,300 | 5,243,800 | 5,190,600 | + 53,200 |
| IRELAND | | | | | | |
| Belfast & C.D. pass. (80 mls.) | 3,846 | 3,870 | – 24 | 95,099 | 96,846 | – 1,747 |
| " " goods | 396 | 464 | – 68 | 18,344 | 18,621 | – 277 |
| " " total | 4,242 | 4,334 | – 92 | 113,443 | 115,467 | – 2,024 |
| Great Northern pass. (562 mls.) | 13,350 | 12,200 | + 1,150 | 365,900 | 273,100 | + 92,800 |
| " " goods | 6,700 | 7,550 | – 850 | 295,400 | 222,200 | + 73,200 |
| " " total | 20,050 | 19,750 | + 300 | 661,300 | 495,300 | + 166,000 |
| Great Southern pass. (2,158 mls.) | 32,916 | 37,126 | – 4,210 | 886,391 | 873,431 | + 12,960 |
| " " goods | 32,914 | 30,960 | + 1,954 | 1,143,234 | 1,068,418 | + 74,816 |
| " " total | 65,830 | 68,086 | – 2,256 | 2,029,625 | 1,941,849 | + 87,776 |

* 10th week, the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period last year; last year's figures are, however, adjusted for comparative purposes

## British and Irish Railway Stocks and Shares

| Stocks | Highest 1933 | Lowest 1933 | Prices Sept. 12, 1934 | Prices Rise/Fall |
|---|---|---|---|---|
| G.W.R. | | | | |
| Cons. Ord. ... | 55½ | 31 | 50½ | +½ |
| 5% Con. Prefce. ... | 109¾ | 69½ | 112½ | — |
| 5% Red.Pref.(1950) | 109¼ | 87½ | 108½ | — |
| 4% Deb. ... ... | 108 15/16 | 99¼ | 109½ | — |
| 4½% Deb.... ... | 108 | 100¾ | 111½ | — |
| 4½% Deb.... ... | 116 | 106 | 119½ | — |
| 5% Deb. ... ... | 128 | 117¼ | 130 | — |
| 2½% Deb.... ... | 65 | 60 | 70½ | +1 |
| 5% Rt. Charge ... | 124 | 111½ | 128½ | — |
| 5% Cons. Guar. ... | 122 | 103 | 126½ | +1 |
| L.M.S.R. | | | | |
| Ord. ... ... | 29⅞ | 12⅛ | 22 | — |
| 4% Prefce. (1923) | 51 | 17 | 49 | +2½ |
| 4% Prefce. ... | 72 | 33¼ | 79½ | +1 |
| 5% Red. Prf. (1955) | 93 | 47¼ | 99½ | — |
| 4% Deb. ... ... | 103¼ | 89½ | 104½ | — |
| 5% Red.Deb.(1952) | 114 | 105 | 114½ | +1 |
| 4% Guar. ... ... | 97¼ | 68⅜ | 100½ | +½ |
| L.N.E.R. | | | | |
| 5% Pref. Ord. ... | 22½ | 7¾ | 16½ | —¼ |
| Def. Ord. ... ... | 10¾ | 4⅛ | 8½ | — |
| 4% First Prefce. ... | 65½ | 19⅜ | 64½ | +2 |
| 4% Second Prefce. | 40½ | 12¼ | 31 | +1½ |
| 5% Red.Pref.(1955) | 83¾ | 27 | 83 | — |
| 4% First Guar. ... | 94¾ | 58¼ | 94½ | +½ |
| 4% Second Guar. | 89¼ | 48 | 89 | +½ |
| 3% Deb. ... ... | 77 | 60¼ | 77 | — |
| 4% Deb. ... ... | 102¾ | 80 | 102½ | — |
| 5% Red.Deb.(1947) | 112 | 102½ | 112½ | — |
| 4½% Sinking Fund Red. Deb. | 107½ | 98¾ | 108½ | — |
| SOUTHERN | | | | |
| Pref. Ord.... ... | 71 | 27¾ | 73 | — |
| Def. Ord. ... ... | 24⅜ | 9⅜ | 23½ | — |
| 5% Prefce. ... | 107 11/16 | 74 | 112½ | +½ |
| 5% Red.Pref.(1964) | 107¾ | 78⅞ | 111½ | — |
| 5% Guar. Prefce. | 124¼ | 102¾ | 124½ | — |
| 5% Red.Guar.Pref. (1957) | 115⅝ | 103½ | 115 | — |
| 4% Deb. ... ... | 107½ | 96¾ | 109 | +1 |
| 5% Deb. ... ... | 126½ | 114¼ | 129½ | — |
| 4% Red. Deb. 1962–67 | 107¼ | 100 | 109½ | +1 |
| BELFAST & C.D. | | | | |
| Ord. ... ... | 6 | | 5 | — |
| FORTH BRIDGE | | | | |
| 4% Deb. ... ... | 99½ | 95½ | 102½ | — |
| 4% Guar. ... | 98½ | 94 | 102½ | — |
| G. NORTHERN (IRELAND) | | | | |
| Ord. ... ... | 7½ | 3½ | 7 | +2 |
| G. SOUTHERN (IRELAND) | | | | |
| Ord. ... ... | 28 | 16 | 14 | — |
| Prefce. ... ... | 24 | 12⅛ | 16½ | — |
| Guar. ... ... | 42 | 16¾ | 46 | — |
| Deb. ... ... | 60 | 30⅞ | 63 | — |
| L.P.T.B. | | | | |
| 4½% "A" ... | 117⅞ | 112 | 121½ | — |
| 5% "A" ... ... | 127¼ | 119¼ | 131½ | +1 |
| 4½% "T.F.A." ... | 111¼ | 106 | 110 | — |
| 5% "B" ... ... | 122½ | 114 | 126 | +1 |
| "C" ... ... | 86¾ | 74½ | 81 | +1 |
| MERSEY | | | | |
| Ord. ... ... | 16¼ | 5 | 12 | — |
| 4% Perp. Deb. ... | 83 | 63⅞ | 86½ | — |
| 3% Perp. Deb. ... | 62 | 51 | 64½ | — |
| 3% Perp. Prefce.... | 50⅝ | 27 | 48½ | — |

# CONTRACTS AND TENDERS

A. A. Jones & Shipman Limited has received an order for one 12½-in. centre screwcutting lathe from the Peruvian Corporation.

Yates Improved Rail Anchor Co. Ltd. has received an order for 7,600 Improved anti-creep rail anchors for 80-lb. rails from the Peruvian Corporation.

Loudon Bros. Ltd. has received an order for one Loudon through type carriage and wagon wheel lathe, complete with electrical equipment, from the Peruvian Corporation.

The United Steel Companies Limited (Workington Iron and Steel Branch) has received an order from the Buenos Ayres Western Railway for 500 pairs of steel fishplates for 100-lb. rails.

Guest Keen & Nettlefolds Limited has received an order for 21,000 steel fishbolts and nuts from the United Railways of the Havana and Regla Warehouses Limited.

D. Wickham & Co. Ltd. has received an order for seven petrol-driven gang trolleys to seat ten men, and nine four-wheeled trailers to seat twelve men from the Central Uruguay Railway.

The Acieries de Haine St. Pierre has received an order from the South African Railways and Harbours Administration for cast steel chairs and buttresses to a total value of £3,685 (Order No. B 6165).

The South African Government Railways and Harbours Administration is to spend £1,434,832 on rolling stock during the present financial year, states a Reuters message from Pretoria. This sum will be divided as follows:—Purchase of new locomotives, £443,500; new coaches, £267,415; new goods wagons, £666,764; and additions and improvements to existing stock, £57,153.

Leyland Motors Limited has received an order from the Yorkshire Traction Co. Ltd., an L.N.E.R. and L.M.S.R. associated undertaking, for an oil-engined Titan double-decked gearless omnibus having hydraulic transmission.

Martin & Co. Ltd. has received an order from the Indian Stores Department for oil-engine driven generator sets, petrol engines, air compressors, water coolers, and switchboard to a total value of Rs. 133,388.

The United Steel Companies (India) Limited has received orders from the Indian Stores Department of 55,430 steel sleepers, 227,300 bolts and nuts and 227,300 spring washers at a total cost of Rs. 253,383, and for 6,020 cwt. of spring steel (British make) at a total cost of Rs. 53,157.

Jessop & Co. Ltd. has received an order from the Indian Stores Department for 1,825 cwt. of spring steel (British make) at a total price of Rs. 16,596.

The Crown Agents for the Colonies have placed the following orders during the past month:—

General Electric Co. Ltd.: Battery materials.
Metropolitan-Cammell Carriage Wagon & Finance Co. Ltd.: Carriage underframes and fittings.
British Insulated Cables Limited and Shropshire Iron Co. Ltd.: Copper wire.
Stewarts and Lloyds Limited: Galvanised steel tubes and fittings.
R. & W. Hawthorn Leslie & Co. Ltd.: Locomotive boilers.
Dennis Bros. Limited: Lorry.
P. & W. MacLellan Limited: M.S. plates.
Turners Asbestos Cement Co. Ltd.: Pipes and fittings.
Mather & Platt Limited: Pumping machinery.
British (Guest Keen Baldwins) Iron & Steel Co. Ltd.: Rails and fishplates for switches and crossings.
Staveley Coal & Iron Co. Ltd.: Spun iron pipes.
Barrow Haematite Steel Co. Ltd.: Steel bearing plates.
Dorman Long & Co. Ltd.: Steelwork.
Buck & Hickman Limited: Tools.
Taylor Bros. & Co. Ltd. and Monk Bridge Iron & Steel Co. Ltd.: Tyres.
Birmingham Railway Carriage & Wagon Co. Ltd.: Bogie flat wagons.
Gloucester Railway Carriage & Wagon Co. Ltd.: Bogie lowsided wagons.

The Agent, Eastern Bengal Railway, Calcutta, invites tenders receivable by September 26 for a 5 ft. 6 in. gauge self-indicating, self-contained dial type 40-ton weighbridge with 20-ft. platform.

The Indian Stores Department is calling for tenders, to be presented in India by October 8, for the supply of buffers and buffer parts required for the G.I.P. Railway. Firms desirous of offering material of United Kingdom manufacture can obtain further details from the Department of Overseas Trade.

The Bengal-Nagpur Railway is inquiring for tenders receivable at 132, Gresham House, Old Broad Street, London, E.C.2, by September 25, for 300 carriage and wagon steel axles and 2,550 carriage and wagon steel tyres; also receivable by September 26 for 1,850 carriage and wagon laminated bearing springs.

The Royal State Railways Administration of Siam is calling for tenders, to be presented in Bangkok by October 19, for the supply of buffing and draw springs. Firms desirous of offering springs of United Kingdom manufacture can obtain further details from the Department of Overseas Trade.

# Forthcoming Events

Oct. 8 & 9 (*Mon. and Tues.*)—L.M.S.R. (London) Amateur Dramatic Society, at the Cripplegate Institute Theatre, Golden Lane, E.C., at 8 p.m. "The Farmer's Wife," by Eden Phillpotts.

Oct. 10 (*Wed.*).—Institution of Railway Signal Engineers, at Inst. of Electrical Engineers, Savoy Place, London, W.C.2, 6 p.m. "The Distant Signal Problem," by Mr. T. S. Lascelles.

Permanent Way Institution (London). "Problems of Permanent Way Maintenance on Electrified Track," by Mr. J. E. Taylor.

Permanent Way Institution (Manchester-Liverpool), at Temperance Inst., Southport, 3 p.m. "Renewal of Steel Underbridges," by Mr. A. Curry.

Oct. 12 (*Fri.*)—Railway Club, 57, Fetter Lane, London, E.C.4. "Punch's Railway (The West London Railway)," by D. V. Levien.

Oct. 16 (*Tues.*).—Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. "Practical and Economic Considerations in the Study of Transport," by Mr. D. R. Lamb.

LECTURES ON ELECTRIC RAILWAY SIGNALLING.—Mr. R. M. McGregor M.Eng., A.M.I.E.E., is to deliver a special course of lectures at the Borough Polytechnic—on Thursday evenings at 7.30, beginning on October 4—entitled "Electric Railway Signalling." The subject will be dealt with in the following subdivisions:—

(i) *The track circuit.*—The track circuit as a basis of power signalling; the d.c. track circuit; the a.c. track circuit; track circuit apparatus; the determination of track circuit constants and the probable train shunt under various conditions.

(ii) *Power operated signals and train stops.*—Signal mechanisms operating mechanical signals; colour light signals of the multiple aspect and single aspect types; train stops.

(iii) *Automatic signalling.*—Scope; power supply; position of signals; systems in use; A.P.B. working.

(iv) *Point operating apparatus.*—All electric and electro-pneumatic point machines; types of control; methods of detection; special types of machines.

(v) *Interlocking plants.*—Interlocking machines, all electric and electro-pneumatic and auxiliary apparatus; the control of points and signals in both systems; typical circuits; power supply at interlockings.

(vi) *Present applications of power signalling.*—Hump yards and centralised traffic control.

For students residing in the County of London, fees will be 10s. for those under 18 years of age and £1 for those over 18, an additional 1s. a year being charged for membership. For students between 18 and 21 learning a trade and for all students residing outside the county, special fees will be payable, details of which may be obtained from the Principal.

PENNSYLVANIA RAILROAD SCHOLARSHIPS.—Two Frank Thomson scholarships, each of a value of $800 annually for four years, were awarded to sons of Pennsylvania Railroad employees by Mr. H. A. Enochs, Chief of Personnel, on September 2. The income for the awards is derived from a memorial trust fund established by the sons and daughter of Mr. F. Thomson, sixth President of the company, and is designed to furnish the sons of employees with a technical education. A third award, the Rea-Newhall scholarship for sons and daughters of the company's servants at the University of Pennsylvania, was announced at the same time.

# OFFICIAL NOTICES

### Bengal-Nagpur Railway Company Limited

THE Directors are prepared to receive Tenders for :—
300 CARRIAGE and WAGON STEEL AXLES.
2,550 CARRIAGE and WAGON STEEL TYRES.
Specifications and Forms of Tender can be obtained at the Company's Offices, 132, Gresham House, Old Broad Street, London, E.C.2, on or after Tuesday, 11th September, 1934.
A Fee of 10s. will be charged for each copy of the Specification, which is *not* returnable.
Tenders must be submitted not later than NOON on TUESDAY, 25th September, 1934.
The Directors do not bind themselves to accept the lowest or any Tender and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,
R. GRANT,
Secretary.

### Bengal-Nagpur Railway Company Limited

THE Directors are prepared to receive Tenders for :—
1,850 CARRIAGE and WAGON LAMINATED BEARING SPRINGS.
Specification and Form of Tender can be obtained at the Company's Offices, 132, Gresham House, Old Broad Street, London, E.C.2, on or after Tuesday, 11th September, 1934.
A Fee of 10s. will be charged for each copy of the Specification, which is *not* returnable.
Tenders must be submitted not later than NOON on WEDNESDAY, 26th September, 1934.
The Directors do not bind themselves to accept the lowest or any Tender and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,
R. GRANT,
Secretary.

### The Institute of Transport Examinations, 1935

NOTICE IS HEREBY GIVEN that the Graduateship and Associate Membership Examinations will be held in London and other centres on Thursday, Friday and Saturday, April 25th, 26th and 27th, 1935.
The latest date for the deposit of forms of entry, which can be obtained after October 1st, 1934, is March 1st, 1935 (January 1st if any exemptions are claimed). Full particulars, previous question papers (price 1s. per set, post free) and copies of a recently issued booklet entitled "The Institute of Transport Examinations: notes for the guidance of candidates unable to attend preparatory courses" (price 2s. 6d. post free) may be obtained from the undersigned.

By Order of the Council,
A. WINTER GRAY,
*Secretary.*

15, Savoy Street,
London, W.C.2.
August 27th, 1934.

### London & North Eastern Railway

NOTICE is hereby given that, for the purpose of preparing the Warrants for Interest payable on the 15th October, 1934, on the Company's 5 per cent. Redeemable Debenture Stock, the balance will be struck as at the close of business on 26th September, and such Interest will be payable only to those Stockholders whose names are registered on that date.
Transfers of the 5 per cent. Redeemable Debenture Stock should, therefore, be lodged with the Registrar of the Company at Hamilton Buildings, Liverpool Street Station, London, E.C.2, before 5 p.m. on 26th September.

By Order,
JAMES McLAREN,
Secretary.

Marylebone Station,
London, N.W.1.
14th September, 1934.

### University of London Commerce Degree Bureau

THE OFFICIAL INSTITUTION OF THE UNIVERSITY for the assistance of EXTERNAL STUDENTS preparing for the COMMERCE DEGREE EXAMINATIONS of the UNIVERSITY OF LONDON who are unable to attend regular College Lectures.
For Prospectus apply to SECRETARY (Mr. H. J. Crawford, B.A.), 46, Russell Square, W.C.1.

### Universal Directory of Railway Officials and Railway Year Book

**40th Annual Edition, 1934-35**
**Price 20/- net.**

**This unique publication gives the names of all the principal railway officers throughout the world, together with essential particulars of the systems with which they are connected. Much general and statistical information about railways is also concisely presented.**

**THE DIRECTORY PUBLISHING CO. LTD.**
**33, Tothill Street, London, S.W.1.**

### OFFICIAL ADVERTISEMENTS

**OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to :—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.**

## Improved Coaching Stock, German State Railway

In pursuance of its policy of attracting traffic by offering improved accommodation, the German State Railway has undertaken an extensive programme of innovations. As has already been recorded, third-class compartments in express coaches and railcars are to be upholstered and, in new coaches, the third-class compartments are to be widened from 1·5 to 1·7 metres (4 ft. 11 in. to 5 ft. 7 in.) and the second-class compartments from 1·8 to 2·0-2·3 metres (5 ft. 11 in. to 6 ft. 6¾ in. —7 ft. 6¾ in.). The assistance of upholstery specialists is being enlisted to ensure results in accordance with modern taste and the principles of hygiene. The temperature in the new coaches is to be regulated automatically by thermostatic control, and special attention has been paid to the methods and degree of ventilation in the latest high speed railcars. These improvements are embodied in the electric railcars for speeds of 120 and 160 km. (75 and 100 miles) p.h., now under construction by the Munich Division of the German State Railway in co-operation with the Association of German Coachbuilders, for service in South Germany next summer.

In order that passengers may obtain a better view of the surrounding country, two experimental observation railcars are under construction and it is intended that they shall be ready for service next summer. These cars are to have end windows and the side windows will be 1,400 mm. (4 ft. 7 in.) in width; there will also be splinterproof glass windows in the roof.

### Renovating Old Coaches

An interesting experiment in making existing coaches more attractive and comfortable is based on the idea of offering passengers gay surroundings, providing interest, entertainment and psychological relaxation throughout the journey. For this purpose a number of Bavarian six-wheeled coaches have been renovated in the Neuaubing repair shops under the direction of Reichsbahnoberrat Gsänger, of the Munich Division, and of the artist Herr Kunze, in accordance with the following programme: Metal window frames are substituted for the original wooden frames, new seats are fitted, the coaches are repainted inside and out, and the gas lamps are replaced by electric lighting with two fittings over each row of seats. Surface wiring is used for the lighting circuits to avoid disturbing the roof.

A different colour scheme is followed in each compartment, for example, a light grey compartment with yellowish curtains, wine-red with rose-grey figured curtains, green interior with brown curtains as hitherto standard, and so on. Altogether, sixteen different colours of paintwork are combined with as many different curtains of all possible materials. A hundred copper engravings tone-in with the decorations of all the compartments, and add to the interest of travel by showing how the towns and country appeared to earlier travellers. These prints are reproductions of 17th and 18th century originals preserved in the topographical department of the Survey Office at Munich. Framed in unstained wood and protected by glass, the engravings form a handsome and interesting addition to the furnishing of the coaches.

The roof of each compartment is painted white and the floor covered with reddish linoleum. The upper part of the luggage rack is painted white, and the lower part matches the walls, thus rendering the rack less obtrusive. The woodwork is left as natural oak. All doors have glass panels permitting full appreciation of the multi-coloured scheme. As a beginning, a train of twelve such coaches has been made up for excursion service, and if it proves as attractive to the public as seems probable, other coaches will be reconditioned in similar manner, the total expenditure involved being relatively small.

# Railway Share Market

The stock and share markets have been firm with increased business in the Home Railway section. The prolongation of the fine weather conditions, the receipt of traffic returns which were regarded as satisfactory and the publicity given to the views expressed by the Chairman of the London Midland & Scottish Railway regarding the course of trade and the improvement in traffic receipts, were together effective in bringing in purchasers of home railway stocks. Market estimates as to probable dividends vary very considerably and it is generally accepted that they are in the nature of guesswork until the final accounting of the year's traffic receipts is made.

The debenture stocks and the preference stocks of the first class are still regarded as among the best yielding investments, but the second preference stock of the London & North Eastern and the deferred and ordinary stocks of the Southern and the L.M.S. respectively are being bought on long-term prospects. The Stock Exchange was inclined to attribute the buying of the latter company's ordinary stock directly to the reference by Sir Josiah Stamp to what was aptly described in one quarter as "autumnal re-recovery." London & North Eastern first and second preference stocks were also favoured on account of the benefits which these stocks should derive from a sustained improvement in the heavy industries of the country. Most interest this week in the railway markets was taken, however, in Argentine railway stocks, which advanced strongly on the proposed conversion of the Argentine Government external loan on to a lower interest-bearing basis which should release a further amount of sterling for foreign exchange. Any step which tends to increase the amount of the funds available for remission to London from the Argentine should assist the Argentine railways, and the market was quick to seize the prospect of this latest financial development being of value to them. All the preference stocks advanced and Buenos Ayres Great Southern and Buenos Ayres Western were particularly favoured.

In other directions there was also a harder tendency. San Paulo ordinary improved on the increase of about 20 per cent. in traffic receipts for the 33 weeks of the current year to date. Leopoldina ordinary moved up on an advance in receipts. Antofagasta consolidated stock again advanced on the reports of improvement in the nitrate industry and the increase of over £120,000 in the company's traffic receipts to date this year. United of Havana 5 per cent. debenture stock attracted some attention on the prospect of the company benefiting from the rise in sugar prices. Among Colonial railway companies Rhodesia issues and Canadian Pacific preference stock were favoured.

## Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

| | Railways | Miles open 1933–34 | Week Ending | Traffics for Week: Total this year | Traffics for Week: Inc. or Dec. compared with 1933 | No. of Week | Aggregate Traffics to Date: Totals This Year | Aggregate Traffics to Date: Totals Last Year | Aggregate Traffics to Date: Increase or Decrease | Shares or Stock | Prices: Highest 1933 | Prices: Lowest 1933 | Prices: Sept. 12, 1934 | Prices: Yield % (See Note) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | £ | £ | | £ | £ | £ | | | | | |
| South & Central America. | Antofagasta (Chili) & Bolivia | 830 | 9.9.34 | 17,040 | + 4,920 | 36 | 506,830 | 374,260 | + 132,570 | Ord. Stk. | 26 | 11 5/4 | 26 | Nil |
| | Argentine North Eastern.. | 753 | 8.9.34 | 7,883 | — 2,595 | 10 | 79,311 | 107,421 | — 28,110 | ,, | 14 1/2 | 5 | 8 1/2 | Nil |
| | Argentine Transandine .. | 111 | — | — | — | — | — | — | — | A. Deb. | 55 | 40 | 50 | 8 |
| | Bolivar .. .. .. | 170 | Aug., 1934 | 5,300 | + 900 | 34 | 49,150 | 51,650 | — 2,500 | 6 p.c. Db. | 10 | 5 | 10 | Nil |
| | Brazil .. .. .. | — | — | — | — | — | — | — | — | Bonds. | 15 | 11 | 12 1/2 | 4 |
| | Buenos Ayres & Pacific .. | 2,806 | 8.9.34 | 70,671 | — 18,938 | 10 | 702,295 | 820,763 | — 118,468 | Ord. Stk. | 26 | 9 7/16 | 14 | Nil |
| | Buenos Ayres Central .. | 190 | 26.8.34 | $140,900 | + $3,300 | 8 | $1,057,600 | $1,045,600 | + $12,000 | Mt. Db. | 30 | 10 | 21 | Nil |
| | Buenos Ayres Gt. Southern | 5,085 | 8.9.34 | 112,478 | — 36,834 | 10 | 1,231,246 | 1,557,859 | — 326,613 | Ord. Stk. | 44 1/2 | 21 1/2 | 30 1/2 | Nil |
| | Buenos Ayres Western .. | 1,926 | 8.9.34 | 36,735 | — 9,662 | 10 | 430,320 | 522,223 | — 91,903 | ,, | 34 1/8 | 15 5/4 | 25 | Nil |
| | Central Argentine .. | 3,700 | 8.9.34 | 112,163 | — 23,197 | 10 | 1,293,187 | 1,398,358 | — 105,171 | ,, | 28 1/2 | 15 | 19 1/2 | Nil |
| | Do. .. .. | — | — | — | — | — | — | — | — | Dfd. | 18 | 10 | 9 | Nil |
| | Cent. Uruguay of M. Video | 273 | 8.9.34 | 14,640 | + 370 | 10 | 138,643 | 140,618 | — 1,975 | Ord. Stk. | 20 | 8 | 10 1/2 | Nil |
| | Do. Eastern Extn. | 311 | 8.9.34 | 3,077 | + 497 | 10 | 28,118 | 24,815 | + 3,303 | — | — | — | — | — |
| | Do. Northern Extn. | 185 | 8.9.34 | 1,486 | + 166 | 10 | 16,029 | 15,988 | + 41 | — | — | — | — | — |
| | Do. Western Extn. | 211 | 8.9.34 | 1,272 | + 107 | 10 | 11,736 | 12,511 | — 775 | — | — | — | — | — |
| | Cordoba Central .. .. | 1,218 | 8.9.34 | 31,370 | — 15,030 | 10 | 340,930 | 432,580 | — 91,650 | Ord. Inc. | 9 1/4 | 2 1/2 | 5 | Nil |
| | Costa Rica .. .. .. | 188 | 30.6.34 | 20,297 | — 7,045 | 52 | 218,120 | 240,673 | — 22,553 | Stk. | 29 | 20 | 27 1/2 | 7 1/4 |
| | Dorada .. .. .. | 70 | Aug., 1934 | 11,300 | + 2,800 | 34 | 80,500 | 61,600 | + 18,900 | 1 Mt. Db. | 76 1/2 | 68 3/4 | 105 | 5 11/16 |
| | Entre Rios .. .. | 810 | 8.9.34 | 12,023 | — 2,171 | 10 | 108,665 | 141,163 | — 32,498 | Ord. Stk. | 26 1/2 | 9 | 15 | Nil |
| | Great Western of Brazil .. | 1,082 | 8.9.34 | 6,300 | — 900 | 36 | 269,500 | 343,100 | — 73,600 | Ord. Sh. | 23/6 | 1/2 | 7/8 | Nil |
| | International of Cl. Amer. | 794 | July, 1934 | $302,803 | — $28,462 | 30 | $3,022,796 | $2,990,146 | + $32,650 | — | — | — | — | — |
| | Interoceanic of Mexico .. | — | — | — | — | — | — | — | — | 1st Pref. | 1/2 | 1/16 | 1/2 | Nil |
| | La Guaira & Caracas .. | 22 3/4 | Aug., 1934 | 3,930 | + 430 | 34 | 29,820 | 42,770 | — 12,950 | Stk. | 16 | 10 | 8 1/2 | Nil |
| | Leopoldina .. .. .. | 1,918 | 8.9.34 | 28,394 | — 364 | 36 | 894,113 | 874,883 | + 19,230 | Ord. Stk. | 20 1/4 | 10 | 11 | Nil |
| | Mexican .. .. .. | 483 | 7.9.34 | $214,100 | + $36,400 | 9 | $2,177,300 | $1,773,800 | + $403,500 | ,, | 3 | 1/2 | 3 | Nil |
| | Midland of Uruguay .. | 319 | Aug., 1934 | 8,088 | — 697 | 9 | 17,549 | 17,530 | + 19 | Ord. Stk. | 2 | 1 | 1 1/2 | Nil |
| | Nitrate .. .. .. | 401 | 31.8.34 | 8,927 | — 848 | 34 | 174,783 | 79,623 | + 95,160 | Ord. Sh. | 78/6 | 11/16 | 3 | Nil |
| | Paraguay Central .. .. | 274 | 1.9.34 | 5,010 | + 1,420 | 9 | 41,150 | 35,970 | + 5,180 | Pr. Li. Stk. | 72 | 49 1/2 | 70 | 8 1/2 |
| | Peruvian Corporation .. | 1,059 | Aug., 1934 | 70,048 | + 14,087 | 8 | 122,665 | 107,206 | + 15,459 | Pref. | 15 1/4 | 5 | 11 1/2 | Nil |
| | Salvador .. .. .. | 100 | 1.9.34 | ¢8,864 | — ¢1,968 | 9 | ¢91,271 | ¢127,378 | — ¢36,107 | Pr. Li. Db. | 70 | 66 1/2 | 70 | 7 1/2 |
| | San Paulo .. .. .. | 153 1/2 | 2.9.34 | 31,065 | — 5,042 | 35 | 1,062,038 | 1,050,360 | + 11,678 | Ord. Stk. | 102 | 68 | 83 | 4 15/16 |
| | Taltal .. .. .. | 164 | July, 1934 | 7,040 | + 3,720 | 4 | 7,040 | 3,320 | + 3,720 | Ord. Sh. | 1 3/4 | 3/4 | 1 3/4 | 5 11/16 |
| | United of Havana.. .. | 1,365 | 8.9.34 | 17,332 | + 4,092 | 10 | 175,734 | 127,324 | + 48,410 | Ord. Stk. | 8 | 2 | 4 1/2 | Nil |
| | Uruguay Northern .. | 73 | Aug., 1934 | 1,015 | — 65 | 9 | 2,071 | 2,146 | — 75 | Deb. Stk. | 6 | 3 1/2 | 4 1/2 | Nil |
| Canada. | Canadian National .. | 23,748 | 7.9.34 | 638,893 | + 49,025 | 35 | 22,043,381 | 19,416,712 | +2,626,669 | — | — | — | — | — |
| | Canadian Northern .. | — | — | — | — | — | — | — | —4p.c. | Perp. Dbs. | 60 1/2 | 38 | 73 | 5 1/2 |
| | Grand Trunk .. .. | — | — | — | — | — | — | — | — | 4 p.c. Gar. | 99 3/4 | 85 | 101 | 3 15/16 |
| | Canadian Pacific .. .. | 17,018 | 7.9.34 | 550,200 | + 74,800 | 35 | 16,321,800 | 14,637,200 | +1,684,600 | Ord. Stk. | 22 1/8 | 11 | 14 | Nil |
| India.† | Assam Bengal .. .. | 1,311 | 11.8.34 | 24,277 | + 3,621 | 19 | 511,239 | 414,504 | + 96,735 | Ord. Stk. | 79 | 70 | 80 | 5 1/4 |
| | Barsi Light.. .. .. | 202 | 18.8.34 | 1,935 | + 113 | 20 | 62,910 | 62,760 | + 150 | Ord. Sh. | 101 3/4 | 70 | 100 1/2 | 6 |
| | Bengal & North Western.. | 2,112 | 18.8.34 | 39,763 | — 1,756 | 20 | 1,015,968 | 992,274 | + 23,694 | Ord. Stk. | 292 | 240 | 282 1/2 | 5 11/16 |
| | Bengal Dooars & Extension | 161 | 18.8.34 | 3,326 | + 480 | 20 | 53,328 | 53,700 | — 372 | ,, | 127 | 119 | 126 | 5 5/16 |
| | Bengal-Nagpur .. .. | 3,269 | 11.8.34 | 91,275 | + 3,341 | 19 | 2,163,225 | 1,952,836 | + 210,389 | ,, | 97 1/4 | 83 1/2 | 103 1/2 | 5 7/8 |
| | Bombay, Baroda & Cl. India | 3,072 | 1.9.34 | 122,550 | + 9,975 | 22 | 3,309,150 | 3,164,775 | + 144,375 | ,, | 112 | 107 | 110 1/2 | 5 7/16 |
| | Madras & South'n Mahratta | 3,230 | 18.8.34 | 102,600 | — 746 | 20 | 2,309,416 | 2,318,018 | — 8,602 | ,, | 127 | 114 1/4 | 127 1/2 | 7 1/16 |
| | Rohilkund & Kumaon .. | 546 | 18.8.34 | 6,818 | — 18 | 20 | 195,199 | 189,731 | + 5,468 | ,, | 260 | 225 | 251 1/2 | 5 5/16 |
| | South India .. .. | 2,526 | 11.8.34 | 80,289 | + 5,707 | 19 | 1,564,382 | 1,499,918 | + 64,464 | ,, | 119 1/2 | 112 | 115 1/2 | 6 5/16 |
| Various. | Beira-Umtali .. .. | 204 | June, 1934 | 57,097 | + 13,325 | 38 | 456,945 | 366,500 | + 90,445 | — | — | — | — | — |
| | Bilbao River & Cantabrian | 15 | Aug., 1934 | 1,358 | — 426 | 34 | 14,340 | 12,190 | + 2,150 | — | — | — | — | — |
| | Egyptian Delta .. .. | 621 | 20.8.34 | 6,039 | + 964 | 21 | 77,425 | 72,286 | + 5,139 | Prf. Sh. | 18 1/32 | 1 3/4 | 2 5/8 | 4 1/4 |
| | Great Southern of Spain .. | 104 | 1.9.34 | 2,453 | — 1,353 | 35 | 73,257 | 73,779 | — 522 | Inc. Deb. | 4 | 3 | 3 1/2 | Nil |
| | Kenya & Uganda .. .. | 1,625 | Mar., 1934 | 240,520 | + 21,064 | 12 | 638,137 | 606,192 | + 31,945 | — | — | — | — | — |
| | Manila .. .. .. | — | — | — | — | — | — | — | — | B. Deb. | 53 | 33 1/2 | 39 1/2 | 8 7/8 |
| | Mashonaland .. .. | 913 | June, 1934 | 109,112 | + 35,582 | 38 | 840,132 | 576,205 | + 263,927 | 1 Mg. Db. | 91 5/4 | 42 | 94 | 5 5/16 |
| | Midland of W. Australia .. | 277 | July, 1934 | 11,897 | — 42 | 4 | 11,897 | 11,939 | — 42 | Inc. Deb. | 89 | 70 | 97 1/2 | 4 1/2 |
| | Nigerian .. .. .. | 1,905 | 28.7.34 | 21,894 | — 2,228 | 17 | 428,158 | 381,071 | + 47,087 | — | — | — | — | — |
| | Rhodesia .. .. .. | 1,538 | June, 1934 | 183,846 | + 45,460 | 38 | 1,420,241 | 1,054,190 | + 366,051 | 4 p.c. Db. | 98 1/2 | 80 3/4 | 102 | 3 15/16 |
| | South African .. .. | 13,182 | 18.8.34 | 505,071 | + 46,139 | 20 | 9,759,819 | 8,744,100 | +1,015,719 | — | — | — | — | — |
| | Victorian .. .. .. | 6,172 | May, 1934 | 755,392 | + 15,381 | 48 | 8,479,194 | 8,811,604 | — 332,410 | — | — | — | — | — |
| | Zafra & Huelva .. .. | 112 | July, 1934 | 11,060 | + 55 | 30 | 76,861 | 73,331 | + 3,530 | — | — | — | — | — |

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the sterling weekly receipts at the par rate of exchange as proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rate of exchange and not on the par value

| Yield % (See Note) |
|---|
| Nil |
| Nil |
| 8 |
| Nil |
| 4 |
| Nil |
| Nil |
| Nil |
| Nil |
| Nil |
| Nil |
| — |
| — |
| Nil |
| 7¼ |
| 5 11/16 |
| Nil |
| Nil |
| — |
| Nil |
| Nil |
| Nil |
| Nil |
| Nil |
| Nil |
| 8½ |
| Nil |
| 7⅛ |
| 4 15/16 |
| 5 11/16 |
| Nil |
| Nil |
| — |
| 5½ |
| 3 15/16 |
| Nil |
| 3¾ |
| 6 |
| 5 13/16 |
| 5 9/16 |
| 5⅜ |
| 5 7/16 |
| 7 3/16 |
| 5 15/16 |
| 5 15/16 |
| — |
| — |
| 4¼ |
| Nil |
| — |
| 8⅞ |
| 5 5/16 |
| 4⅜ |
| — |
| 3 15/16 |
| — |
| — |

exchange